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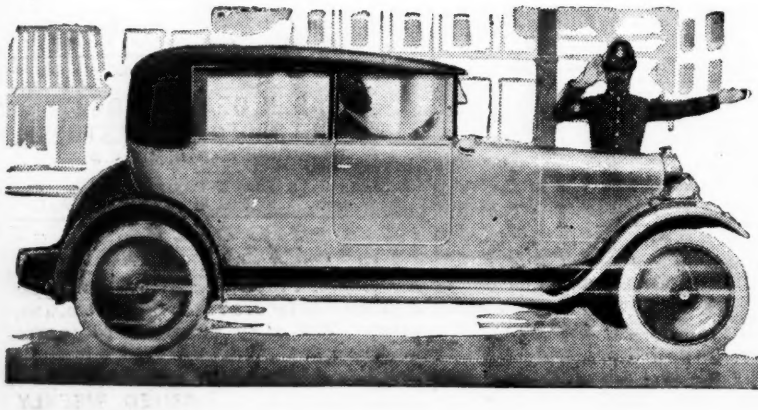

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Observations
ON
THE NUTRITION OF ARTICULAR CARTILAGE.*

BY
T. S. P. STRANGEWAYS,
LECTURER IN SPECIAL PATHOLOGY IN THE UNIVERSITY OF CAMBRIDGE.
(From the Laboratories of the Cambridge Research Hospital.)

[*With Special Plate.*]

THE structure of articular cartilage has been the subject of numerous papers, but the study of its nutrition appears to have been neglected. The generally accepted explanation of the nutrition of this avascular tissue is that the nutritive fluid is derived from the vessels of the adjoining structures, chiefly from the vessels of the marrow and bone, but also to some extent from the *circulus articuli vasculosus* formed by the narrow border of vessels which lie underneath the synovial membrane and surround the circumference of the articular cartilage. The fluid from these vessels is supposed to reach the cartilage cells by imbibition. Some observers have described lymph channels in the hyaline matrix, but the existence of these is very doubtful.

Microscopic examination of a section through the articular cartilage prepared and stained by the ordinary methods reveals a characteristic, well defined structure. The cartilaginous tissue rests upon a thin, practically continuous layer of bone. In the deeper parts of the matrix are seen columns of cartilage cells which run perpendicularly towards the free surface; as these become more superficial the columns contain fewer cells and are distributed in an irregular manner, and the uppermost groups lie parallel to the free surface. The free surface is covered by a layer of cells with thin, elongated nuclei (perichondrium). In the deeper layers of the cartilage, where it lies in contact with the bone, a deposit of calcium salts is seen; this may be called the zone of calcified cartilage. A study of such a section shows that the cells of the superficial layers appear more active than those of the deeper layers, and it is difficult to understand how the nutritive fluid can pass from the vessels of the bone through the bone matrix and through the avascular layer of calcified cartilage towards the surface in sufficient quantity to cause the obviously greater vitality of the superficial layers. It is equally difficult to explain how the fluid from the vessels of the *circulus articuli vasculosus* can reach the cells forming the large area of cartilage on the articular surface.

If, as I believe, the present view of the nutrition of articular cartilage is incorrect, there is yet another source from which it may derive nourishment, namely, the synovial fluid. It is strange that this source of nourishment should not have been more widely discussed. The supply of synovial fluid in a normal joint is sufficient, and granting that it contains material suitable for the nourishment of the cartilage, the cells can obtain by imbibition all the nutriment required by this type of tissue.

In support of this view I offer the following description of the naked eye and microscopic changes seen in certain free bodies which are found occasionally in a joint cavity.

The origin of these free bodies has been discussed by several wrtters (Klein,[1] Weichselbaum,[2] Poulet and Vaillard,[3] Real,[4] König,[5] Rimann,[6] Ludloff,[7] and others). The question whether they arise from local changes within the joints, or whether they are of traumatic origin, need not be discussed here, but it seems probable that the majority, if not all, of the type referred to in this paper are due to traumatic detachment of a portion of the articular cartilage. Whichever explanation is the true one, the microscopic changes which take place are of considerable interest.

Four free bodies of this kind have been examined: they were obtained from the joints of three patients. The first was found accidentally in the knee-joint of a youth; the other three were very kindly presented to me by Major D. W. Hume, and were removed by him at the operation table.

The first specimen is from the knee-joint of a youth, aged 16, whose left lower limb was amputated for sarcoma of the thigh. On opening the joint there fell out a smooth shining lenticular body, 2.3 cm. long and 1.5 cm. broad, with rounded edges. To the naked eye its structure resembles cartilage. On the centre of the outer condyle of the femur there is a slightly depressed area of a shape similar to the free body, but somewhat smaller. The surface of this area is somewhat irregular and is covered with a thin smooth shining tissue, through which the yellowish texture of the underlying bone can be seen. Evidently the free body had been detached some time previously from this area. The articular cartilage of the joint is otherwise quite normal. One surface of the free body is white, smooth, and shining, and exactly resembles cartilage to the naked eye. This smooth surface is present on the rounded edges of the body, and is continued on to the other surface for a distance of 0.3 cm., forming a white ring around it. The other surface is slightly irregular and yellowish, but examination shows that this area is also covered with a thin smooth shining membrane. The smooth white cartilaginous surface evidently represents the free surface of the cartilage and the irregular surface the deeper portion where it was attached to the condyle. Small bony fragments were probably adherent to this side of the free body after its separation from the condyle.

Microscopic examination of the free body shows that both surfaces as well as the edges are covered by several layers of cells with elongated nuclei. On the side which forms the free surface of the cartilage they exactly resemble the cells of the normal perichondrium, and shade off into hyaline cartilage (Fig. 1). At the edges these cells form a definite layer of cells with elongated nuclei which shade off into young atypical cells (Fig. 2). The under surface is covered by several layers of cells of connective tissue type. This tissue varies in thickness; it is thicker towards the edges and becomes thin where it covers the irregular yellowish tissue seen on the deeper surface of the fragment. There are in this layer of connective tissue cells a few small areas which show signs of proliferation; these appear to be replacing the atypical tissue described below. At the edges of these proliferating cells, where they are in contact with the atypical tissue, a few well-formed giant cells are seen (Fig. 3). These resemble osteoclasts. The greater part of the section is composed of typical hyaline cartilage, which shows no signs of degeneration or of fibrillation. The nuclei stain well and the cells are arranged as in normal cartilage. They represent the free surface of the articular cartilage. There is in the deeper layers of this cartilage a definite deposit of calcium salts, but these are scattered irregularly and are for the most part grouped round cartilage capsules (Fig. 4). They do not show the normal appearance of calcified cartilage, but seem to represent calcium salts which have been set free from the layer of calcified cartilage as well as from bony fragments previously adherent to the cartilage and have then accumulated around the cells and in the matrix of the central part of the specimen where the proliferative processes are least marked. A thin layer of atypical tissue is seen on the under surface between the layer of connective tissue cells and the hyaline cartilage. This layer seems to be derived from and to replace the detached fragment of bone and the zone of calcified cartilage. Two distinct forms of cell are seen; one resembles young hyaline cartilage in the course of regeneration such as is sometimes seen in sections from joints of chronic arthritis. The young cartilage cells are of a hyaline type, but consist of closely set single cells lying in a hyaline matrix. These areas are found lying in and apparently replacing the other form of tissue, which consists of single cells fairly regularly scattered lying in a matrix somewhat hyaline in appearance when seen in sections stained with haematoxylin and picrocarmine. Stained by Schmorl's method, the cells present the appearance of typical bone cells with long processes. This tissue passes over in some places into the atypical cartilage tissue just described, and in other places into the layers of cells with elongated nuclei which form a capsule on the under surface of the free body. In no part of the section, however, is the structure of normal bone observed. Some parts of the matrix in which the bone cells lie show in those sections which are

* The expenses in connexion with this study were met by a grant from the Medical Research Committee.

stained with haematoxylin distinct blue granules apparently due to a deposit of lime salts.

From the above histological examination it seems clear that a portion of the articular cartilage was detached from the condyle of the femur, and small fragments of bone remained attached to the articular cartilage at the time of separation. Definite changes have occurred in these structures; the cells have proliferated, and the matrix has undergone changes. Thus the free surface of the hyaline cartilage shows an increase in thickness of the perichondrium, while the fragments of bone adherent to the cartilage show considerable modification. On the under surface the bone cells have proliferated and rearranged themselves so that they form a definite layer of cells of a connective tissue type which blend with the layer of thickened perichondrium, and thus a continuous capsule of connective tissue has been formed around the free body. The bone cells in the deeper parts have also rearranged themselves in an atypical matrix as described. These atypical tissues seem to have been formed partly by proliferation of the bone cells and partly by proliferation of the cells of the hyaline cartilage. In areas where the proliferation is most active new atypical hyaline cartilage has been formed.

The origin of the giant cells mentioned is not clear, but they are found in areas where the connective cells are undergoing proliferation and replacing the atypical bone and cartilage cells. These giant cells have presumably been formed from the proliferating connective tissue cells, and seem to be a form of osteoclast.

Microscopic examination of the depressed area on the condyle, from which the fragment was obviously detached, shows that the free surface is covered with a layer of tissue, which appears to be formed of connective tissue cells somewhat stellate in appearance with branching processes. This layer, which is avascular, is about the same thickness as the hyaline cartilage, which it unites on both sides around the edges of the depression. These connective tissue cells form a fairly sharp zone where they join the normal articular cartilage, the cells of which at the edge of the zone show obvious signs of proliferation. The bone trabeculae upon which the tissue rests show obvious signs of previous fracture and have a very irregular arrangement; they are also somewhat increased in thickness and density. In other respects there is little change in the structure of the articular tissue in this situation.

The second specimen of free body was removed at operation from the knee-joint by Major Hume. This free body had caused repeated attacks of pain in the joint for several years. The patient made a good recovery, but the attacks of pain continued, and a few months afterwards Major Hume fully exposed the joint, and found lying towards the posterior portion of the joint cavity behind the crucial ligaments a second free body. The larger specimen (which was removed first) is lenticular in shape, 3 cm. long, 1.5 cm. broad, and 0.75 cm. in its thickest part. One surface is smooth and shining and resembles articular cartilage. The other surface is nodular and shows depressions, but is also covered with a smooth, shining tissue.

On naked-eye examination of a section through the specimen two definite types of structure are seen. There is a thin white capsule surrounding the whole specimen. The tissue beneath the surface, which is smooth and cartilaginous in appearance, extends for a depth of 0.3 cm.; it occupies about a third of the area of the section, and resembles hyaline cartilage. The rest of the tissue is yellow and more granular in appearance, but on closer examination it is found to consist of a superficial whitish-yellow portion and a deeper central zone which has a brownish-yellow colour.

The smaller specimen, which was removed at the second operation, is 1.75 cm. long, 2 cm. wide, and 0.75 cm. thick, and shows a similar external structure to the other specimen, one surface being smooth and the other nodular, but on section the larger portion of the cut surface resembles hyaline cartilage. There is a thin layer on the nodular surface which has the same yellow granular appearance as that seen in the larger specimen.

Microscopic examination of the larger specimen shows on the smooth surface, which represents the free surface of the articular cartilage, a somewhat thickened layer of perichondrium; this is continued over the edge on to the nodular surface, where it is continuous with a tissue formed by several layers of connective tissue cells. These layers form a membrane of some thickness. The hyaline cartilage on the free surface is not much altered, though there is some evidence of proliferation of the cartilage cells, together with an irregular deposit of calcium salts, probably derived from the calcified cartilage and fragments of bone. Near the rounded edge of the specimen there is a formation of a new atypical hyaline cartilage, the cartilage cells being more numerous and the hyaline material less abundant than in normal cartilage. As in the previous specimen, an atypical tissue has replaced the bone which was adherent to the cartilage at the time of separation, and this can again be divided into two forms of tissue—one resembling atypical cartilage and the other atypical young bone. When stained by Schmorl's method well formed bone cells are seen lying in a granular matrix. In places this tissue shades off into a degenerated tissue lying in the centre of the mass, which appears to be made up partly of degenerating, but not necrotic, cartilage, and partly of a degenerate tissue which seems to result from an arrested attempt at the formation of hyaline cartilage. Towards the free surface the bone cells at the rounded edge of the specimen appear to have been transformed into the young hyaline cartilage previously mentioned, and on the under surface they blend with the cells of the connective tissue capsule previously described. Many of the cells in this layer, when stained by Schmorl's method, resemble typical bone cells.

One part of the specimen shows an interesting structure. The connective cells of the capsule, the bone cells in the atypical bone, and those of the young hyaline cartilage meet, and the impression is given that the connective tissue and young cartilage cells arise from the modified bone cells, which in their turn must have originated from the normal bone cells of the bone detached from the condyle.

In one section a small oval area is seen which consists of branching stellate cells with long processes somewhat myxomatous in appearance, resembling the cells seen in the early stages of the formation of fat (Fig. 5). This may be considered a form of avascular atypical marrow tissue.

A few giant cells are also seen in these sections; these appear to be formed from the connective tissue cells forming the capsule, and appear to be taking part in the tissue changes which are taking place at the edges of the atypical bone and cartilaginous tissue. These seem to be acting as osteoclasts.

Microscopic examination of the smaller specimen shows similar changes. The central portion of the section is composed of typical hyaline cartilage, the cells of which form groups owing to proliferative changes. On the free surface of this hyaline cartilage there is a zone of tissue which contains cells resembling atypical hyaline cartilage with single nuclei. Their structure is somewhat like the cartilage found in the ear of a mouse, but it shows more matrix. In some places a definite layer of cells is seen. These cells resemble bone cells when stained by Schmorl's method, and appear to be replacing the perichondrial layer.

The opposite surface of the specimen shows that the deeper layers of the hyaline cartilage are infiltrated with lime salts, and beneath this a layer of cells is seen resembling bone cells, which stain characteristically by Schmorl's method. In this region also there are areas of atypical cartilage tissue composed of single cells surrounded by a hyaline capsule. The free surface is covered with a distinct layer of connective tissue cells. As in the previous specimen areas of myxomatous cells are replacing the atypical cartilage and bone cells from which they seem to originate.

Groups of proliferating connective tissue cells are also seen in these sections. In some of these groups, where the cells are in contact with the atypical bone or cartilage, a few giant cells are found.

The changes seen in the two specimens above described resemble closely those seen in the first examined. In this again there is evidence that the cartilage, when it became detached, carried with it fragments of bone, and that proliferative changes have occurred after its separation both in the bone and cartilage cells. In spite of the long history there is evidence that these changes are still progressing, for otherwise it would be difficult to explain the presence of the well-formed giant cells and the young

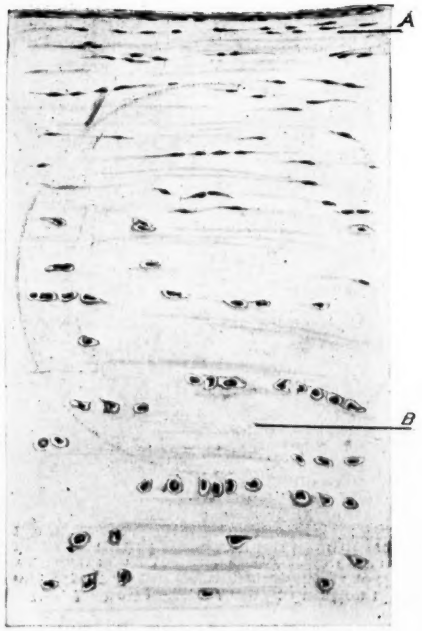


FIG. 1.—Showing connective tissue cells with elongated nuclei on the free surface, A; hyaline cartilage, B. × 350.

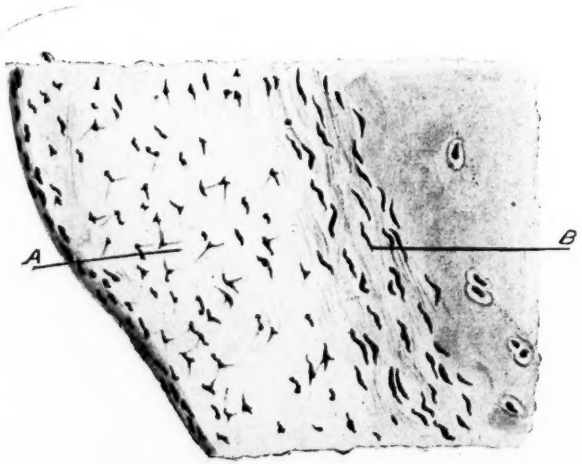


FIG. 2.—Showing connective tissue cells, A; cells with elongated nuclei, B. × 350.

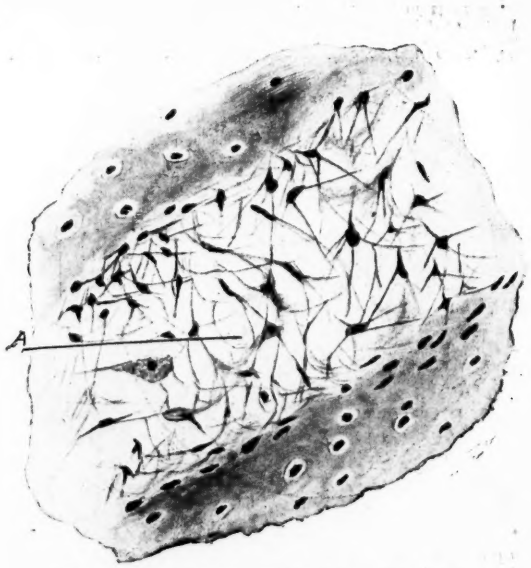


FIG. 5.—Showing connective tissue cells derived from proliferating carti age cells.

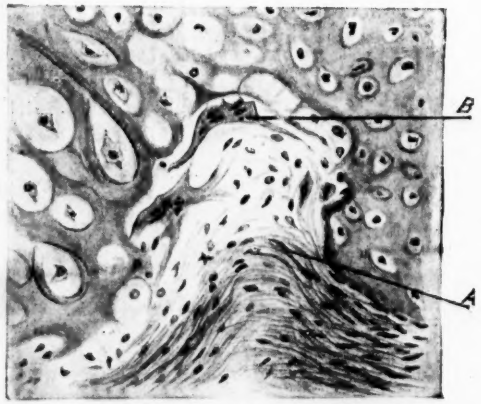


FIG. 3.—Showing proliferating connective tissue cells, A; giant cells, B. × 350.

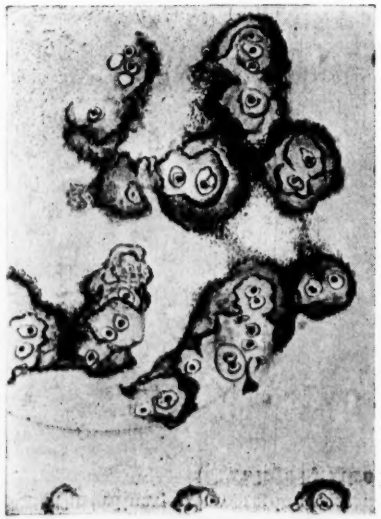


FIG. 4.—Showing hyaline cartilage with a granular deposit of lime salts around the cell. × 200.

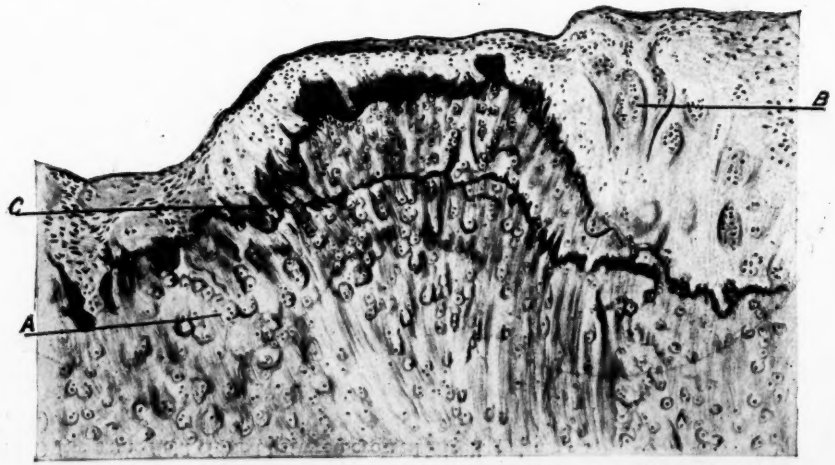
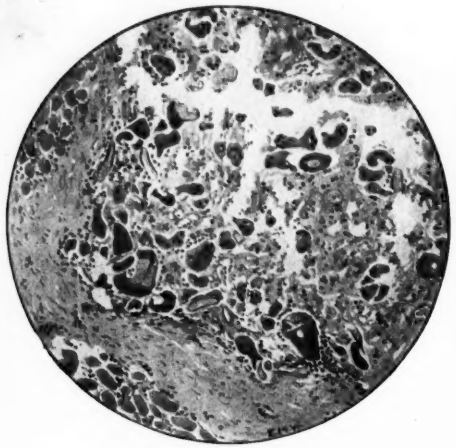


FIG. 6.—Showing degenerative changes in hyaline cartilage, A; proliferation of the cartilage cells, B; deposit of lime salts, C. × 60.

In each instance Figure A represents the ordinary microscopic appearances, Figure B the same field viewed between crossed Nicol's prisms.
(Drawings by Miss Ethel Wright.)



A

B

FIG. 1.—LOW power. Case 2; duration six years; silkworm gut. The patient had been operated on six years before for appendicitis. The tissue containing the suture relics was removed from the wall of a sinus which had persisted ever since. Note numerous small portions of silkworm gut, many of them ingested by foreign body giant cells. The lesion is bounded by a layer of dense fibrous tissue (seen here on two sides) separating it from the surrounding striped muscle.

A

B

FIG. 3.—LOW power. Case 6; duration three years; silk. From an old case of ventrifixation. At the second operation a small painful tumour was excised from the depths of the scar. To show numerous silk fibres cut transversely or obliquely, lying in the midst of necrotic débris and pus. Some of the fibres to the left hand side of the field show the pre-absorptive changes mentioned in the text.

A

B

FIG. 2.—High power. Case 8; duration six years; silkworm gut. From a case of recurrent renal calculus in which a portion of the old scar was excised at the second operation. To show a large foreign body giant cell containing two small portions of silkworm gut.

A

B

FIG. 4.—High power. Case 19; duration three months; silk. Old gastro-enterostomy case. To show pre-absorptive changes in silk fibres. The marginal portion first and ultimately the whole fibre swells up and becomes granular and strongly eosinophilic, at the same time losing its optical activity from without inwards. Note the small, optically active cores in the left half of the field.

fibroblastic cells which are found in certain areas. The presence of stellate cells of pre-adipose tissue type is also of interest.

The fourth specimen of a free body was removed by Major Hume from the knee-joint of a patient who gave a history of recurrent attacks of pain in the joint for many years. The specimen is an irregular round flat body, 4 cm. in its largest diameter, 3.5 in the smallest, and about 0.5 cm. thick. The edges are rounded, and the surfaces are nodular and fissured but covered with a layer of shining, membranous-like tissue. On section the structure resembles modified hyaline cartilage. There can be little doubt that this specimen altered in shape and increased in size after separation.

Microscopic examination of this specimen shows changes which differ somewhat from those described in the previous specimen. No typical articular cartilage is seen. Part of the specimen is composed of a form of young hyaline cartilage mixed with which are areas of atypical fibro-cartilage. In some parts of this tissue a deposit of calcium salts is found (Fig. 6). Scattered throughout the section, especially towards the surface, are groups of cells which, on staining by Schmorl's method, are found to be typical bone cells. These do not, however, show the structure of true bone when stained with haemotoxylin and eosine, or with picrocarmine. In the centre of the specimen there is an area of degenerating tissue in which lies a small mass of true bone; this appears to be a portion of a fragment of the original bone showing typical bone trabeculae, with Haversian canals surrounded by their system of concentric lamellae. The fat cells of the bone marrow and the blood vessels of the marrow and bone are necrotic. The bone cells do not stain well.

In this specimen again there is evidence of proliferative change both in the cartilage and bone after separation, but this change is more advanced and the resulting structures are more atypical than in the other specimens described.

It seems fair to assume that the changes in structure found in the detached cartilage and bone of the four specimens described occurred after separation from the articular surface; even if this is not admitted, the long history of pain and inconvenience—which ceased in two of the patients after removal of the free body—is evidence that these free bodies had been present in the joint for some years. The staining properties and the appearance of the cells on section show that they were alive at the time of their removal from the joint cavity.

Conclusions.

It may thus be assumed that nutritive processes were being carried on after separation. That these processes were of an active type is shown by the proliferative changes described.

There are two possible sources from which this nutritive material might have been derived:

1. From the death of cells in the fragment. From these dead cells the surviving cells might have obtained their food supply. Nutrition of this type has been described by Burrows and Neymann[8] as occurring during the growth of cells in isotonic salt solution. This explanation, however, cannot be accepted, as there is evidence that such fragments increase in size after separation while they are lying free in the joint cavity.

2. The other explanation is that the nutritive material is derived from the synovial fluid. If this is so, then the possibility of cartilage cells and of bone cells also being nourished by the synovial fluid must be allowed.

It follows, therefore, that the articular cartilage of the joints may derive some, if not the greater part, of its nourishment from the synovial fluid.

If this hypothesis is true, then the changes which are found in the degenerative types of arthritis can also be explained. The primary cause of these degenerative types will be found not in the cartilage or bone, but in changes in the nutritive value of the synovial fluid. There is evidence, which I hope to produce later, that changes in the nutritive value of the synovial fluid may be due to changes in the vessels of the capsule of the affected joints.

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ON THE USE OF POLARIZED LIGHT IN THE DETECTION AND INVESTIGATION OF SUTURE MATERIALS EMBEDDED IN THE TISSUES.*

BY

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[*With Special Plate.*]

The use of the polarizing microscope in pathology has hitherto been mainly confined to the study of the doubly refracting lipoids, "myelin," cholesterin, cholesterin esters, and the like. Such investigations have been made by Adami and Aschoff (1906,[1] 1910[2]), Powell White (1908,[3] 1909[4]), Stewart (1915[5]), and others. Its use as a means of detecting microscopic foreign bodies (fragments and threads of clothing, particles of wood, etc.) in the depths of wounds has been pointed out by Policard and Desplas (1917[6]). Shattock (1917[7]) has shown its value in the elucidation of a unique case of foreign body tumour formed round crystals of silica which had been forcibly intruded into the tissues of the lip eleven years before.

The present communication will show that many of the suture materials in common use by the surgeon are optically active, and that the polarizing microscope affords a ready means for their detection in the tissues as well as for their subsequent investigation. Since the optical activity of these substances is unaffected by treatment with the usual dehydrating and clearing agents, paraffin sections are all that is required for the demonstration of the phenomenon. If such a section be viewed microscopically between crossed Nicol's prisms, the particles of suture material present will, in certain instances, show up brilliantly illuminated on a dark background, and in this way they can often be picked out with great readiness, even when their presence has not previously been suspected.

It is important to notice that certain tissues are normally optically active, even in paraffin sections. Thus, the collagen-fibril bundles of dense fibrous tissue show various degrees of luminosity, at least when they are cut longitudinally or obliquely, and the same is true of the stratum corneum of squamous epithelium and of the hairs in their root follicles. The muscle bundles of striped muscle are also doubly refracting under certain conditions (? of internal strain), and even the stratum lucidum and rete Malpighii may show the phenomenon to a slight extent. In these situations it is sometimes noticeable that luminous and non-luminous segments alternate. Elastic tissue, on the other hand, would appear to be optically inactive.

The Optical Activity of Sutures.

The suture materials used in surgery fall into two main categories, (1) absorbable (the various kinds of catgut), and (2) unabsorbable (silkworm gut, silk, linen and "celluloid" thread, and horsehair). Kangaroo tendon occupies an intermediate position. These substances have all been examined with the polarizing microscope in the freshly prepared state, before use, and it has been found that silkworm gut, silk, linen and "celluloid" thread show intense optical activity, whereas catgut, horsehair and kangaroo tendon show the phenomenon only to a very slight degree or even not at all. This difference is accentuated by residence in the tissues. Catgut tends to lose very speedily what little optical activity it possesses, whereas that of silk and silkworm gut persists for months and years.

Before discussing the morphological appearances of the more common suture materials as seen in paraffin sections it is necessary to indicate briefly the different purposes for which they are employed.

1. Silkworm gut is now used almost exclusively for skin sutures, whose function is temporary and which are removed by the surgeon after a certain number of days.

2. Catgut is used where absorbable sutures are required, but these must be able to hold the parts in apposition

* Communicated to the Pathological Society of Great Britain and Ireland, January, 1920. The expenses of this research were in part defrayed by a grant from the British Medical Association, for which I beg to express my thanks.

sufficiently long to allow natural union to take place; for example, in stitching the deeper layers of the anterior abdominal wall after laparotomy.

3. Silk, linen, and "celluloid" thread are used under two conditions, in both of which it is necessary that the mechanical action should be exerted over a considerable period of time, namely, (*a*) where the suture will ultimately cut out spontaneously and escape from a free surface, as in closing off the duodenum after partial gastrectomy, and (*b*) where it will probably remain permanently in the tissues, as in arterio-venous anastomotic operations and in ventrifixation.

Material Studied.

The material on which this study is based consists of twenty-six specimens containing suture relics. Most of them are from portions of tissue which had been excised during life by the surgeon; a few were obtained *post mortem*. Eighteen specimens were found to contain silkworm gut, five catgut, and six silk. The age of the various specimens, that is, the length of time the sutures had been in the tissues, varied between wide limits. The silkworm gut periods varied from three weeks to six years, the catgut from four days to five months, and the silk from three weeks to three years.

1. *Catgut.*—This is met with in the form of irregular masses, homogeneous or very slightly fibrillated, and occasionally broken up into a few irregular pieces, never into definite discrete fibres. If the stitch has become infected it will be found embedded in pus, otherwise it is shut off by a fibrous wall which is lined internally by cellular tissue containing many endothelial cells and foreign body giant cells. None of the latter show small portions of suture material in their cytoplasm such as occurs in the case of silkworm gut. The catgut takes the acid dye, and it may or may not show a slight degree of luminosity when viewed between crossed Nicol's prisms. The rate of absorption varies greatly in different cases, and is accelerated by the presence of sepsis.

2. *Silkworm Gut.*—This is the common variety of suture relic met with in connexion with old operation scars, and the one which provokes the most characteristic and striking foreign body giant-cell reaction. The appearances in these cases suggest that small fragments of the gut become detatched and remain behind in the track of the suture when the latter is removed.* They are seen as small highly refractile bodies of various shapes and sizes, often acicular or rod shaped, sometimes unstained, sometimes taking the basic dye, and always showing intense optical activity when viewed with polarized light (Figs. 1A and 1B). The smaller particles are frequently contained within the cytoplasm of giant cells (Figs. 2A and 2B); the larger have usually a number of giant cells in close relation to them. They tend to occur in small foci, with many giant cells, endothelial cells, fibroblasts, and lymphocytes, the whole often surrounded by a wall of dense fibrous tissue. In this way they may lie locked up in the tissues for years. I have never been able to convince myself that there is much evidence that foreign body giant cells absorb these silkworm gut relics. They seem rather to protect the tissues by simply enveloping or rounding off the corners of mechanically irritating particles. In some of the cases the particles of silkworm gut are both few in number and minute in size, and might readily escape detection† if looked for in the ordinary way. The use of the polarizing microscope may then greatly facilitate the search for such relics or confirm their presence (Figs. 2A and 2B).

3. *Silk.*—Silk and linen thread (including Pagenstecher's celluloid thread) are somewhat similar morphologically, and all show intense optical activity. They can be distinguished by the fact that linen fibres possess transverse cracks or striae, whereas silk fibres do not. The specimens which I have examined—six in number—all contain silk sutures. They are composed of fibres, usually tightly packed, which are triangular or polygonal in transverse section, and which, when they are cut obliquely or lie longitudinally, have often a prismatic as well as a doubly refracting action on polarized light (Figs. 3A and 3B). In haemalum and eosin sections the fibres remain unstained except for a narrow rim at the margin, which stains a purplish hue. The whole fibre is stained bright yellow by picric acid, as in van Gieson's stain. In two of the six cases examined the suture is embedded in pus, doubtless as a result of bacterial infection; in two it is surrounded by a zone of fibroblasts, endothelial cells, and foreign body giant cells, and in one it is simply encased round with dense fibrous tissue. In the two purulent cases, the marginal fibres of the suture, which are becoming separated from one another by pus cells, show a very definite and peculiar morphological change, associated with loss of optical activity (Figs. 4A and 4B). The change affects first the peripheral part of the fibre, which becomes swollen, granular, and intensely eosinophilic. The outline changes from triangular or polygonal to spheroidal, and there is a definite increase in size. The central zone, at first unaffected and still optically active, steadily diminishes in size until finally the whole fibre becomes changed in the manner indicated, and optical activity entirely disappears. It would appear to be a preliminary process to absorption, since such fibres may sometimes be seen in course of disintegration, and it is clearly related to the presence of pus, being perhaps due to a digestive action on the part of the leucocytic enzymes.

Apart from this physico-chemical change in silk, it is very striking how both silkworm gut and silk retain for long periods the property of optical activity when embedded in the tissues. In some of the cases which I have examined the suture materials have persisted in an optically active form for three years (silk) and six years (silkworm gut), the latter even after it has been broken up into tiny fragments and ingested by foreign body giant cells.

Fallacies.

1. The only serious source of fallacy is the presence of small, air-borne particles of cotton-wool and the like on the surface of the section, since many of these—for example, cotton-wool itself—are optically active. It is usually easy to differentiate. Suture fibres are obviously embedded in the substance of the tissue; extraneous materials lie in a plane above (or below) that of the section, and are seen to be overlapping the cellular structure of the part. Sutures tend to be focally distributed more or less in relation to scar or granulation tissue, possibly with giant cells in their immediate neighbourhood; air-borne fluff may be found on any part of the slide.

2. As already mentioned, very dense fibrous tissue, striped muscle, and the stratum corneum of squamous epithelium, all possess slight optical activity, but the degree of luminosity is so slight and the anatomical arrangements are so obvious that no difficulty should arise.

Summary.

1. Sutures or ligatures of silkworm gut, silk and linen thread—that is, all the ordinary suture materials except catgut—are intensely optically active, and the polarizing microscope affords a ready means of determining their presence in tissue sections.

2. These various materials may retain their optical activity in the tissues for years, and in the case of silkworm gut even after the fibres have been broken down into tiny pieces and ingested by foreign body giant cells.

3. Catgut is much less optically active than the other substances named, and the property tends to be speedily lost in the tissues. For this material, therefore, the method may be inapplicable.

4. Ordinary paraffin sections are all that is required for the demonstration of the phenomenon.

Addendum.—Since this paper was written Dr. J. G. Greenfield has very kindly lent me the histological preparations relating to the experimental investigation of nerve suture materials carried out by him in conjunction with Mr. Percy Sargent.[8] The experiments were made on the great sciatic nerve of rabbits, and extended over periods of from twenty-one to eighty-one days. Suture relics were visible microscopically in 13 cases, and in these the materials used were catgut of various kinds (6 cases), silk (3 cases), linen thread (3 cases), and Japanese silkworm gut (one case). The last three show very intense optical activity in every instance. Catgut is variable: some specimens are optically quite inactive;

*I am informed that this is quite in keeping with clinically observed fact—namely, that silkworm gut sutures are often rough and eroded at the time of removal. Sutures which have been repeatedly sterilized by boiling are much more liable to undergo this change, and are, indeed, sometimes frayed when inserted.

† Some were in fact so missed and only discovered when the sections were re-examined with polarized light.

most show fairly definite luminosity with crossed Nicol's prisms, at least in parts—even a specimen which had been eighty-one days in the tissues.

I beg to express my great indebtedness to Professor J. H. Teacher and Dr. J. G. Greenfield for the loan of valuable material, and to Mr. E. R. Flint for useful criticism and suggestions.

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A Clinical Lecture
ON
GALL STONES.

DELIVERED AT GUY'S HOSPITAL
BY
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I PROPOSE to make some general remarks upon gall stones and to illustrate my lecture by three interesting cases.

Nearly all gall stones form in the gall bladder, and are due to:

(*a*) Infection of the gall bladder.
(*b*) Over-concentration of the bile.

(*a*) The infection may occur through the blood stream, through the lymphatics, or ascend along the ducts from the duodenum. The researches of Rosenow indicate that infection by the blood stream is by far the most important, and cultivations obtained from infected human gall bladders often produce similar lesions in animals. It is very probable also that infection spreads to the gall bladder along the lymphatics from diseases of neighbouring organs, as, for instance, the appendix, duodenum, and stomach. The most common organisms to be found are the streptococcus, *B. typhosus* and *B. coli*. These have been cultivated from the centres of gall stones, from the bile, and from the wall of the gall bladder. It is well known that infection of the gall bladder often occurs in enterica and that gall stones frequently follow it.

(*b*) That concentration of the bile, leading to the deposition of mucus and crystals, is an important factor is clear, for nearly four-fifths of the patients suffering from gall stones are women who have had children, and in them symptoms often date from the time of pregnancy, when the bile is very concentrated. Stasis of the bile in the gall bladder is an important additional factor, therefore in a pendulous weak gall bladder, or in one the duct of which is kinked or obstructed in any way, gall stones are likely to form.

The cystic duct is very narrow and tortuous and its mucous membrane is raised into valvular folds, so that it is very difficult for any but very small stones to pass through it (Fig. 1). Moreover, it is much narrower than any part of the common bile duct, except the termination of the latter at the duodenal papilla, therefore the large majority of sufferers from gall stones never develop jaundice.

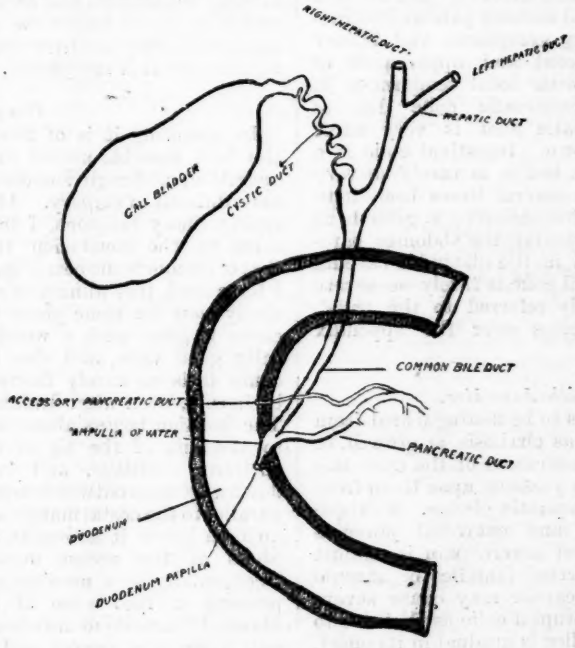

FIG. 1.—Anatomy of the biliary apparatus.

It is also important to remember that the part of the common bile duct traversing the pancreas is not as easily distended as the first part of the duct; hence it often happens that the common bile duct is shaped like a funnel, and stones become impacted in the upper part of the pancreatic portion of the duct. The duodenal papilla is very narrow, and minute stones which will pass freely through the other parts of the ducts become arrested here. A stone smaller than a pea may thus lead to death; when it is impacted at this point it dams up both the bile and the pancreatic juice.

SYMPTOMS.

1. *Stones in the gall bladder* may cause (*a*) recurrent attacks of pain in the right hypochondrium associated with vomiting and local tenderness. These attacks are often mistaken for gastritis. It may be possible to feel the gall bladder during the colic, or on deep inspiration there may be "a catch" or pain in the gall-bladder region, and local tenderness on palpation. Or (*b*) a dull aching pain in the right hypochondrium and right shoulder, with a distaste for food and flatulent dyspepsia. It may not be possible to feel any swelling unless the cystic duct be obstructed or cholecystitis with local peritonitis develop. There is no jaundice unless the common duct also is obstructed.

2. *A stone in the cystic duct* may cause colic at intervals, with a swelling having the characteristics of a distended gall bladder. Usually this is in the right hypochondrium, but it may reach the right iliac fossa. Jaundice is absent unless the stone is junctional and presses upon or otherwise obstructs the common or hepatic duct. The stone usually falls back and the colic abates after a few hours, but it may remain impacted and cause inflammation with suppuration, or even sloughing of the gall bladder. Grey patches appear at the fundus of the gall bladder or below the stone in the duct. Perforation may take place and local or general peritonitis ensue, or adhesion to the duodenum, colon, or stomach may take place, with the formation of a fistula. It is still a common error to believe that gall stones are unlikely without a history of jaundice, but it should be remembered that as the cystic duct is narrower than the common duct, except at the papilla, more stones get impacted in the cystic duct than elsewhere, and that jaundice is really an exceptional and late sign of gall stones. This error has condemned many patients to years of unnecessary suffering, a diagnosis of gastritis or hysteria being commonly made.

3. *A stone in the common bile duct* usually causes colic and jaundice sooner or later, and fever due to an ascending infective cholangitis is sometimes present during the attack of jaundice. Sometimes stones impacted in the common duct do not cause colic but only nausea. There is often tenderness on deep palpation over the common duct above and to the right of the umbilicus. Small stones in a dilated common bile duct, although they may cause frequent colic, may not obstruct long enough to produce jaundice. It is imperative, therefore, to examine the common duct carefully at the operation in every case, even when there is no history of jaundice. The gall bladder is usually contracted, shrunken, and matted down by adhesions in these late cases, so that no gall bladder swelling is evident. In fact, if the gall bladder can be felt in a jaundiced patient, the obstruction is probably due to other causes, such as growth of the head of the pancreas or chronic pancreatitis.

DIAGNOSIS.

(*a*) *Stones in the Gall Bladder.*

The diagnosis of gall stones in the gall bladder when there is no history of definite biliary colic may be very difficult, for the symptoms may closely resemble those of

gastric or especially duodenal ulcer or chronic appendicitis. Gall stones may give rise to reflex disturbances in the stomach and duodenum, altering the secretion and the movements of the stomach, and thus adding to the difficulties. The absence of hyperacidity on repeated examination is against peptic ulcers and in favour of gall stones. The researches now going on at Guy's by the analysis of the gastric juices every quarter of an hour may throw some additional light on this subject. The repeated presence of even minute quantities of blood in the vomit, gastric juice, or faeces is much in favour of peptic ulcer and against gall stones. I have, however, seen profuse melaena due to the erosion of the cystic artery by a gall stone impacted at the neck of the gall bladder. I have also known the same sign to be due to ulceration of the gall bladder and the formation of a fistula into the bowel. Anaemia and wasting are more commonly associated with peptic ulcers than with gall stones.

The time relationship of the pain to food is not so constant and striking with gall stones as with duodenal ulcer. Marked local tenderness on palpation below the ninth right costal cartilage on deep inspiration is much in favour of gall stones. Radiography may help by giving evidence of pyloric or duodenal obstruction or distortion of the shadow due to gastric or duodenal ulcer. It is unfortunate, however, that it does not often show gall stones; even with the greatest care in the examination and a good apparatus, only large gall stones or large collections of small stones are shown by the *x* rays. This fact is rather important, as many people are led to believe that they have no gall stones if the *x* rays do not show any. It is sometimes practically impossible to distinguish cholecystitis due to gall stones from chronic appendicitis, especially when the appendix is unusually high and near the gall bladder. If one is fortunate enough to see the patient in an acute attack the difficulties are less, for a local fixed swelling may be palpable over the appendix or the enlarged gall bladder may be felt moving on respiration.

(b) Biliary Colic without Jaundice.

This has to be distinguished from other colics, especially right renal colic. Here the distribution of the pain is of the greatest importance, renal colic shooting from the loin along the course of the ureter and causing pain and retraction of the testicle with urinary symptoms, and biliary colic being confined to the front and upper part of the abdomen and associated with local tenderness in the right hypochondrium. Pancreatic colic due to stones impacted in the pancreatic duct is very rare; the pain is mesial and lower down. Intestinal colic is a far more common source of error, but it is rarely so very violent as biliary colic. I have several times been temporarily misled by colic due to obstruction by a growth at the hepatic flexure, but on watching the abdomen carefully peristalsis may be noticed in the distended caecum and ascending colon. Appendical colic is rarely so severe and the pain is lower, generally referred to the navel. There is marked local tenderness over the appendix during the attack.

(c) Biliary Colic with Jaundice.

Jaundice due to gall stones has to be distinguished from that due to other causes, such as cirrhosis, or growth, or hydatid cysts of the liver, or obstruction of the main bile ducts by growth in their walls or pressing upon them from the head of the pancreas or lymphatic glands. To these conditions chronic pancreatitis and catarrhal jaundice must be added. The absence of severe pain is against gall stones and in favour of catarrhal jaundice or chronic pancreatitis. Jaundice due to cancer may cause severe pain, but rarely so acute and abrupt a colic as that due to gall stones. Moreover, the jaundice is gradual in its onset, progressive and severe, and not sudden, remittent or intermittent and moderate as it generally is with gall stones. Long-continued and black jaundice is very rarely due to gall stones. The age, sex, and especially the general condition of the patient, assist in the diagnosis, for with pancreatitis, and especially with malignant disease, the patient looks more ill and wastes more rapidly than with gall stones.

Small hydatid cysts may become impacted in the common bile duct, and give rise to jaundice and colic simulating that due to gall stones. Under these conditions the absence of a palpable stone in the common bile duct at the operation may be very disconcerting; but on examining the liver carefully the parent hydatid cyst may be felt. In a case of this kind I enucleated the cyst from the upper surface of the liver five years ago, and the man is quite well now.

With secondary cancer of the liver there is usually some indication of the primary growth, and definite local swellings may be felt in the liver; but with primary cancer of the liver jaundice may appear early. In one case I found a diffused primary endothelioma of the liver. Hypertrophic cirrhosis of the liver may also mislead, for the patient often denies the essential history. The peculiar congestion of the face, and the marked wasting associated with the enlargement of the liver, may help.

Indications for Operation.

For obstruction of the cystic duct or neck of the gall bladder with distension of the gall bladder which is unrelieved within forty-eight hours, it is imperative to operate in order to avoid suppuration and its complications, such as sloughing of the gall bladder, localized or even general peritonitis, pylephlebitis, and pulmonary complications, and such late complications as intestinal obstruction secondary to perforation of the gall bladder into the duodenum or colon. In the former case the stone is generally impacted in the lower part of the ileum. In the latter case it generally gets impacted in the narrow part of the pelvic colon. This complication is generally very grave, because it is not often recognized in time for a hopeful operation.

It is of the greatest importance to realize that jaundice which is neither slight nor transient, and is therefore not catarrhal, calls for early exploration and treatment. In this way only can such dangerous complications as infective cholangitis and post-operative haemorrhage be avoided with certainty. Sometimes it is advisable to wait for a few days when there is fever due to an exacerbation of existing cholangitis, for it is safer to operate in a quiet period.

When gall stones in the gall bladder give rise to symptoms, such as repeated attacks of colic or localized pain with flatulent dyspepsia, it is wise to advise operation unless there are grave contraindications to the anaesthetic. It is wise to do this in order to avoid the complications already mentioned, and also carcinoma of the gall bladder, which is apt to follow the chronic irritation of gall stones and to involve the liver early and to become irremovable by the time it is recognized.

Operation.

In operating it is of the greatest importance to obtain the best possible access to the bile apparatus, for the operation, although sometimes easy, may be one of the most difficult in surgery. After trying many incisions, I have come to the conclusion that that of Kocher is the best (Fig. 2). I have used this almost exclusively now for some years because it gives such a wonderfully good view, and also because it is so rarely followed by hernia, even after drainage. The incision begins above and to the left of the tip of the ensiform cartilage, and runs downwards and outwards nearly parallel to the costal margin and an inch below it across all the fibres of the rectus muscle. Occasionally it is necessary to prolong it into some of the fibres of the oblique muscles. It is not necessary to divide any intercostal nerves and thus weaken the abdominal wall. The muscular fibres join well. I make no apology for describing this incision, for several writers on operative surgery figure and describe it as being placed much further out where it would not give anything like as good access. In addition to this, the fatty coverings, which are often abundant, are divided for one or two inches more than the deep part of the wound, and a lumbar cushion is invaluable to bring the biliary apparatus prominently forward into the wound. If necessary, the falciform ligament also can be divided without detriment. In every case the operation should begin as an exploration of the whole abdomen, special attention being paid to the stomach, pancreas, and

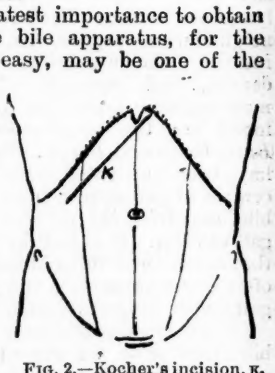

FIG. 2.—Kocher's incision, K. All the fibres of the right rectus but no nerves are divided, although the incision may be prolonged across the linea alba and outwards into some of the external oblique muscle.

appendix. Then the whole bile apparatus, including the liver, are carefully examined before any operation is decided upon. When the stones are limited to the gall bladder and cystic duct I always remove the gall bladder if the condition of the patient and the mobility of the parts allow it to be done without undue risk.

I believe that under these conditions cholecystectomy is not only more radical in that it removes the source of gall stones but also that it is safer, there being less risk of infecting the wound. In this way the considerable risk of recurrence of gall stones or the occasional occurrence of a biliary or mucous fistula and the danger of cancer of the gall bladder are avoided. The need and duration of drainage are lessened, a firmer wound is obtained, as well as a more comfortable and rapid recovery. It would, of course, be foolish to adopt cholecystectomy in old, feeble, or jaundiced patients, or when adhesions clearly add to the risk of the operation. A stone impacted in the cystic duct may be extremely difficult to remove by backing it into the gall bladder, and its impaction in the duct for some time may be followed by stricture with mucous fistula or mucocele. It is generally much easier and safer to remove the whole gall bladder and duct without opening them. Recurrence of symptoms is much rarer after cholecystectomy than after cholecystostomy.

Stones in the Common Bile Duct.

Whenever possible stones in the common bile duct should be removed through an incision in the anterior wall of the first part of the duct well above the duodenum. When a stone is impacted in the lower reaches of the duct it may be very difficult to press it back into the first part. It is much easier to do this before the bile is allowed to escape; therefore the stone should always be pushed back before the duct or gall bladder is opened. The incision is made well above the duodenum in order to avoid a branch of the hepatic artery which often runs down to the upper border of the duodenum, and in every case the left index finger is passed into the foramen of Winslow, and the stone is held up and fixed before an incision is made into the duct. When the stone cannot be dislodged from the lower part of the common bile duct it may be removed by displacing the second part of the duodenum forward and incising the duct as it runs through or grooves the pancreas. To allow this to be done the posterior peritoneum has to be incised vertically a little to the right of the duodenum. It is also of the greatest assistance to pass a blunt-pointed probe downwards from the first part of the duct. This serves to tilt the duct to the right and forward into the wound. When a stone is firmly impacted at or near the papilla and cannot be dislodged, the trans-duodenal route has to be adopted and the mucous membrane covering the stone incised, either at or above the papilla, and the stone thus removed. The wound in the anterior wall of the duodenum is closed with the greatest care, and sealed over by displacing and fixing some of the omentum over it. Without this care the trans-duodenal route does undoubtedly add considerably to the risk of the patient. In all cases the common bile duct must be proved to be clear by the insertion of the finger whenever possible, or by the passage of a blunt-pointed probe down the duct into the duodenum. The probe should also be passed up into the hepatic ducts, for a stone may have become displaced upwards into one of them. Whenever I have to open the common bile duct for stone, I drain it by inserting and fixing a small tube in it. I believe this is much safer than sewing up the duct and placing a tube near the incision. In one of my cases in which I did not fix a tube in the duct, bile escaped into the lesser sac, distended it enormously, and had to be evacuated ten days later. The patient had been very collapsed when the sac became over-distended, and she was then thought to be suffering from acute cardiac failure. She made a good recovery after the second operation. In another instance, which I published in the *Guy's Hospital Reports* (vol. lxvi, p. 219), a large clot formed in the sutured common bile duct, and gave rise to colic and collapse. At the second operation the healed duct was incised, the clot evacuated, and the patient made a rapid recovery.

MORTALITY.

The mortality of operations for gall stones has greatly diminished in recent years owing to improvements in technique.

Cholecystectomy and Cholecystostomy.—For the three years 1913–15 inclusive the Mayos[1] had a mortality of 1.2 per cent. in 1,767 cholecystectomies and 3.4 per cent. in 435 cholecystostomies. From 1907–15 inclusive they had a mortality of 1.3 per cent. in 2,493 cholecystectomies and of 1.5 per cent. in 2,854 cholecystostomies. It is very interesting that during the last three years of the period given the mortality of cholecystectomy should have been reduced below that of cholecystostomy. This is doubtless due chiefly to the fact that with increasing experience the Mayos have become more radical, doing cholecystectomy as an operation of choice and reserving cholecystostomy for the graver cases unsuitable for cholecystectomy.

Choledochotomy.—The mortality of simple choledochotomy in the absence of serious symptoms of infection or jaundice of long duration is about 2.5 per cent., but when infection of the bile ducts has occurred with remittent fever and deep jaundice and infective cholangitis has occurred, the mortality is about 15 per cent. The operation should, whenever possible, be done before the onset of this grave condition, or, failing this, it should, if possible, be performed during a remission of the fever and jaundice.

Duodeno-choledochotomy has a mortality of about 8 per cent. It is done for the removal of stones impacted at or near the ampulla of Vater, is often deferred until too late, and is in itself a severer operation, apt to be followed by duodenal fistula. Whenever possible the stone should be backed into the first part of the duct, whence its removal is much safer.

CASE I.—*Stone Impacted at Duodenal Papilla: Cholecystostomy: ? Pancreatic Growth: Biliary Fistula: Cholecystectomy: Choledochotomy: Recovery.*

The patient, a man aged 67, kindly wrote the following account of his symptoms:

Family History.

"Father never ill until age of 65, when he had a severe illness, at first thought malignant, but was no doubt due to gall bladder. He was not jaundiced. I, a student at the time, examined faeces for gall stones, but found none. He completely recovered for seven years, and then after a long walk died of haemorrhage from the stomach in twelve hours. I was then abroad. Father's brother, a healthy man, was treated for gall stones at the age of 45. Recovered and died at 74. Mother died at 85.

Personal History.

"Born 1852, never robust, but seldom laid up. Had typhoid badly in Argentina at the age of 20 and malaria badly in Persian Gulf at age of 24. Came home and malaria disappeared. Always lived a moderate life.

History of Present Illness.

"About five and a half years ago, after about twenty-four hours' dull pain in the back, I became slightly jaundiced, which lasted a few days. I had about two similar attacks in four years up to March, 1918. During this night (March 21st, 1918) I awoke at 1.30 with a strong rigor lasting twenty minutes. No pain; resembled malaria but without subsequent sweating. The day before this I had felt some malaria and discomfort in the back. Slightly jaundiced next day, which went off in four days' time. Day after attack motored twenty-one miles and sat on Recruiting Board. Got home very weak in afternoon. Went again next day, but could scarcely eat my lunch. Kept on the same for five days, but then awoke in the night with severe rigor and high temperature (104° or 105°). Stayed in bed three days, and symptoms, including jaundice, gradually subsided, but felt very weak. For some months before this attack was conscious of tenderness over gall bladder, which was always improved by doses of castor oil, even before bowels responded. Weight (stripped) after attack, 8 st.; about three or four years before, about 10 st. Went into a nursing home July, 1918. Had a rigor the first night there and about every six days; was operated on after about three weeks and three small gall stones removed. I noticed that the first two motions after operation contained bile, but no bile in the subsequent motions. Came home about a month after the operation. Nearly all bile came through sinus in wound, and I was slow in picking up strength. Had three or four loose motions every day, with ravenous appetite for the six months until the second operation. There was occasionally a streak of darker colour in the almost uniformly pale motions."

Second Operation.

I saw the patient for the first time in January, 1919. At the first operation the pancreas had been hard, and malignant disease was feared, but the patient's general condition improved, and he put on some weight during the next six months, but his biliary fistula became very irksome. When I saw him all the bile escaped at the biliary fistula, and the patient was still thin and in a bad state of nutrition. He was willing to undertake any risk in order to get rid of the fistula.

The lips of the fistula were separated and clamped to avoid spilling of bile infecting the wound, and also to maintain the

pressure inside the ducts. Kocher's incision was adopted; a vertical incision had been used at the first operation. The gall bladder was very large, the common bile duct was distended, no stone could be felt at first, but later, on feeling the third part of the duodenum, a large stone was felt evidently at the end of a very much elongated bile duct or pedunculated papilla. With some difficulty the pedunculated part of the duct was steadied with one hand while the stone was squeezed back into the duct with the other. In this way the need of opening the duodenum was avoided, and the stone then extracted from the first part of the common duct. In order to avoid recurrence, the ducts having been proved to be clear, the gall bladder was removed, and the common bile duct drained. The stone was the size of a filbert. The patient wrote on March 1st, 1920, stating that:

"Since my second operation there has been no looseness of bowels, and the appetite became very moderate. The motions are always uniformly stained dark-brown with bile. Unless the gall bladder has some beneficial secretion of its own—I have only heard of mucus—I think we should be better without it."

CASE II.—*Cholecystostomy: Cholecystectomy: Choledochotomy.*

Mrs. J., aged 52 years, was a patient of Dr. Talfourd Jones. After suffering some twenty years from symptoms of gall stones with intermittent attacks of jaundice and colic, she had been operated upon by a woman surgeon in March, 1916. Cholecystostomy was then performed and several stones removed from the gall bladder. The attacks continued. The second operation was performed in January, 1917, by the same surgeon, who then removed the gall bladder. The attacks continued. The patient had a slight attack of jaundice while she was still in the hospital. On several occasions she has been deeply jaundiced, and has suffered very severe colic. She has been very reluctant to consider another operation, but she found life intolerable, and at last consented to see me. A vertical incision had been adopted at the former operation.

She was admitted into Guy's Hospital in November, 1919. Kocher's incision. Six stones removed from the common bile duct, the stones serving as excellent guides to the dilated common bile duct, although the gall bladder had been previously removed. The patient made a good recovery, and has remained well since. It is probable that a larger and more suitable incision would have enabled the surgeon to find and remove the stones from the common bile-duct at the first or second operation.

CASE III.—*Gall Stone in Neck of Gall Bladder: Cholecystectomy.*

Mrs. A., aged 45, patient of Dr. Phillips, Croydon. She had had three children, and is a very active woman who eats very little owing to indigestion. She has never had a bilious attack, but often has slight attacks of diarrhoea. On the evening of November 7th, 1915, she ate a piece of unripe pear. At 1 a.m. on November 8th she was seized with violent abdominal pain, and did not sleep again. She got up and went into another room and lay on a bed there, but could not sleep. She was sick a good many times. She then went downstairs and lay before the gas fire, as she was so very cold and in much pain. She did not bring up anything but watery fluid, and later bile. Dr. Phillips saw her in the early morning, and thought she had intestinal colic due to the pear. The pulse and temperature were subnormal and she was cold. As she was very tender in the epigastrium, he wondered whether she had a perforated gastric ulcer, and got Dr. Male to see her. Dr. Male found that the tenderness and pain were then lower down towards the appendix, and he suggested an operation for (?) acute appendicitis. I saw her at 4 p.m. on November 8th, and felt two swellings, which Dr. Male and Dr. Phillips had also felt, in the right flank. Dr. Phillips thought that they might be scybala or a piece of pear, and found that they were movable. After getting the abdomen thoroughly relaxed, I was able to make out that the swelling was of the same size, shape, and attachments as the gall bladder, but it was lying very far back and a little lower down and farther out than usual. As I felt it the patient was seized with nausea and vomiting, and the consistence of the swelling seemed to vary. Once it seemed to consist of one lump, and another time of two. At the operation this was explained, for I clearly felt the fundus and at times also the bend of the neck of the gall bladder. I diagnosed gall stones impacted in the cystic duct, and advised an immediate operation, as the patient was so ill and would probably get worse. After some delay she was moved to a nursing home.

Operation.

Dr. Male gave the anaesthetic (November 8th, 1915). The gall bladder having been more definitely made out under the anaesthetic, a Kocher incision was made. The gall bladder was found. It was considerably enlarged, uniform in shape, and very oedematous. There was also some bloody fluid in the kidney pouch. A stone was felt impacted in the neck of the gall bladder. This was backed a good deal, but in view of the absence of stones in the common bile duct and the pendulous nature of the gall bladder, it was clearly safer to remove the latter, and this was done in the usual way, the raw area on the under surface of the liver being covered over with peritoneal flaps sewn with catgut. The abdominal wall was closed as usual, but a small tube was left at the inner and upper angle of the wound. She made a good, rapid, and complete recovery, and is now well, four and a half years later.

REFERENCE.

[1] *Collected Papers of the Mayo Clinic*, 1916, p. 274.

AIR-WAY INFECTIONS.

BY

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IT is probable that in considering the mode of infection of the trachea and bronchial tubes sufficient attention is not paid to the normal protective mechanisms of these regions. At present methods of prophylaxis are directed mainly towards an internal immunity designed to lessen the severity of an infection when once it has taken place. It seems not improbable that an attempt to turn the natural mechanisms of prevention to account might be worth considering with the intention of actually preventing infection from occurring.

The respiratory passages from the anterior nares to the infundibula are so constructed by their plications and subdivisions and by their moist and sticky surface to take up the particles of dirt and bacterial organisms that may enter in the inspired air. Such foreign matter as may get right through into the alveoli is carried away into the body by the lymphatic system; but for dealing with that which settles in the air-ways—and this is the enormous bulk—we have, in all except the very smallest tubes, two essential mechanisms: they are the mucous secretion and the ciliary action of the mucous membrane.

The value of the mechanical self-cleansing process due to the sweeping action of the cilia is self-evident. Whilst the cilia are acting effectively any bacterial organisms deposited on the surface will be swept along and not allowed time to affect the underlying cells, for a stationary state would be necessary before invasion of the epithelium could occur. The sweeping-up function culminates in cough and expectoration of the offending matter.

As regards the protective functions of the mucoid matter lining the mucosa of the air tubes, apart from its capacity for maintaining an even supply of moisture so essential for ciliary action, there is experimental evidence that this type of substance protects the tissues in various parts of the body against the action of ferments. For instance, in the alimentary tract, Bayliss,[1] quoting Klug, states that it is the mucin which protects the alimentary canal from the action of its own digestive juices; this it apparently does by adsorbing the excess of enzymes. Now it is probable that the damage to the wall of the air passages that may follow the implantation on it of pathogenic organisms is in part effected by ferment action, the ferments being derived from the infecting organisms, either from their living or dead bodies. Apart from a direct breach in the epithelial wall from ferment action, there is also the probability of the absorption of toxic bodies if these lie directly on the epithelial surface. With the exception quoted below, I do not know of any experimental evidence on this latter point, although the same probabilities exist as in the case of ferment action, but it can be shown by staining experiments that large molecular bodies do not easily pass through a layer of mucilage. It follows that the action of bacterial ferments and toxins on the epithelial cells is likely to be inhibited by a free supply of mucus.

In the various examples of the "carrier" state we find the body protected from the action of pathogenic organisms, not by a true immunity of the internal type—for these patients are often not immune and may suffer reinfection—but apparently by the mucous environment of the bacteria. In these "carrier" conditions, if we except urinary tract infections, which are not properly to be considered in this class, we find the bacteria bedded in a mass of mucus: The typhoid bacillus in the gall bladder, the dysentery bacillus in the mucous crypts of the large bowel, the gonococcus in the prostate, the meningococcus in the nasopharynx, and the diphtheria bacillus in the muco-purulent discharge of chronic rhinitis. All these instances suggest that the body obtains protection from bacterial invasion in this manner.

I have shown elsewhere,[2] using bacteria embedded in mucilage of tragacanth, that the animal organism could be protected against the highly toxic Shiga's bacillus. The organism remained alive in the body for months, leading neither to the production of toxic symptoms nor to the production in the host of antibodies directed against the infecting bacillus.

This point of view of course is not new, but it seems probable that more might be done, both prophylactically and therapeutically, if closer attention were paid to the normal mechanisms of body protection.

REFERENCES.

[1]Bayliss, Nature of Enzyme Action, *Monographs of Biochemistry*; Longmans, Green and Co., p. 130. [2]Beulans, *Journ. of Path. and Bact.* (in the press).

LOEWI'S ADRENALIN MYDRIASIS AS A SIGN OF PANCREATIC INSUFFICIENCY.

BY

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LATE ACTING MAJOR R.A.M.C.,T.F.

SERVICE in the army has hitherto prevented me from publishing these notes, which were made in 1914. The cases, which were under the care of Dr. Murray in the Manchester Royal Infirmary, were, clinically, almost identical.

CASE I.

A man, aged 63, was admitted on October 26th, 1914, complaining of jaundice and intense pruritus all over the body. He stated that he had had dyspepsia for several years, had been a heavy beer and whisky drinker, and was very constipated. He first noticed jaundice and pruritus five weeks previous to admission, and for some months his stools had been gradually becoming lighter in colour. He had had no pain whatever over the liver or gall bladder.

Condition on Examination.

The skin, mucous membranes, and sclerotics were all extremely yellow. Emaciation was not marked until later, but the patient said that he had become weaker. The abdomen was distended and there was some ascites. No peristalsis was visible and no distended superficial veins were seen. The right lower border of the liver could be felt 3½ in. below the costal margin. The gall bladder was distended, tense, and tender; it extended down to the level of the umbilicus. The patient vomited once or twice soon after admission. The stools were soft, unformed, almost pure white in colour. The urine showed bile present, no albumin, no sugar, reaction neutral, specific gravity 1008.

After-History.

On November 2nd, 1914, two drops of adrenalin chloride solution (1 in 1,000) were dropped into one eye. After one hour there was no reaction, the pupils remaining exactly equal. The reaction was again negative on November 6th and on November 9th. The patient had free haemorrhage from the bowels and died on November 10th.

Post-mortem Examination.

The jaundice was found to be due to carcinoma of the bile ducts with secondary growths in the liver. Suppurative cholangitis was also present. The gall bladder was greatly distended with serous fluid, but it contained no gall stones. The pancreas was nowhere invaded by the new growth, nor were there any secondary deposits in it, the gland itself being quite healthy.

CASE II.

A man, aged 42, was readmitted to the infirmary about October 1st, 1914, complaining of jaundice. He had had "dyspepsia" during September and October, 1913, and influenza during the early part of that year. At Easter, 1914, he first noticed jaundice, accompanied by severe pruritus. His stools had been clay-coloured for some time. He was admitted on May 26th, 1914, refused operation, and was discharged June 23rd, 1914, "condition unchanged."

Condition on Examination.

The skin, mucous membranes, and sclerotics were very deeply pigmented with bile; he was worn and emaciated, the pruritus was much less than formerly, but there was great tenderness over the gall bladder and attacks of pain round the region of the umbilicus. The gall bladder was distended, and could be felt 3 to 4 inches below the right costal margin. The liver was not enlarged. There was a history of several attacks of epistaxis. No ascites was present, and no distended superficial veins were visible.

After-History.

On October 10th, 1914, two drops of adrenalin chloride solution (1 in 1,000) were dropped into one eye. After one hour there was marked dilatation of the pupil of that eye. On October 28th, and also on November 1st, the test was repeated, with marked positive reaction (dilatation of pupil) on each occasion.

A few days before his death exaggerated peristalsis of the walls of the stomach became visible through the abdominal wall. At the same time, owing to the progressive emaciation, a hard mass became palpable in the region of the head of the pancreas. The stools were clay-coloured; the urine mahogany-coloured, neutral, specific gravity 1009; bile was present, but no albumin nor sugar. *X*-ray examination on June 16th, 1914, and also later, had shown no gall stones nor other evidence of disease of the gall bladder. The patient began to vomit everything he took by mouth, became very depressed and stuporous, and died on November 4th.

Post-mortem Examination.

There was found to be malignant disease of the head of the pancreas, which invaded the duodenum and common bile duct. There were metastases in the liver, and obstruction and dilatation of the common bile duct and bile passages. The growth in the pancreas caused stenosis of the duodenum, with secondary dilatation and hypertrophy of the stomach and upper part of the duodenum.

It will be noted that in Case I, in which the pancreas was completely free from disease and quite efficient, Loewi's reaction was completely negative on three separate occasions, whereas in Case II, in which the pancreas was almost completely disorganized, the reaction was markedly positive, also on three separate occasions.

VAGASTHENIA.

BY

JAMES A. W. WATTS, M.B., B.S.DURH.,

MAJOR R.A.M.C.(R.).

ALL medical practitioners who, as officers or civilians, have been occupied with troops during the war, and those who are still engaged in treating returned soldiers or as members of Pensions Medical Boards, have been, and still are, constantly confronted with the letters D.A.H. My observation leads me to believe that the ideas held as to the meaning of these letters are not very distinct or informative. Broadly and literally, they indicate a condition of increased frequency, slowing or irregularity of the heart beat, or a combination of any two of these. Since these alterations of rhythm occur in many pathological and physiological states, which may depend on disordered function arising outside the heart itself or in the intrinsic structure of that organ, it seems to me that it is desirable to find a phraseology which will not only be less cumbersome but which will bear also some relation to the particular condition that is met with. It is a reflection on the medical profession that its members should so readily follow the Army fashion—neither dignified nor scientific—of labelling things by initial letters. The letters P.U.O., however useful a purpose they may have served until the discovery of a definite disease, which we now know as trench fever, are gradually falling into disuse, and I suggest that their brothers, D.A.H. and V.D.H., should accompany them into the war museum, not again to emerge.

Clinical Characters.

Although the term "D.A.H." may be applied to any of the conditions enumerated above, it is used in the vast majority of cases to signify a symptom group which has been described for many years past as irritable heart or soldier's heart, and it would have been as well to retain these names until we could decide upon a more scientific one. Notwithstanding the divergent views as to the cause of this malady, it has come to be recognized as a definite clinical entity, presenting a well defined and easily determined syndrome, marked by increased frequency of the heart's action, early exhaustion, shortness of breath, dizziness, and frequently precordial pain; less often there is precordial hyperaesthesia. These symptoms are common to all cases of myocardial exhaustion, and it is necessary that we should be able to exclude all forms of structural heart disease before arriving at a definite diagnosis. Murmurs may be and often are present to increase the difficulty of deciding. What are the points, then, which will help us? First and foremost, in my opinion, is the absence of cardiac enlargement; secondly, the rhythm, although much increased in rate, is always regular; the inception of a new rhythm, such as auricular flutter, auricular fibrillation, or extra systoles, never occurs. Murmurs are always systolic in time and soft in character, and are variable—that is to say, they are not always present and alter with the position of the patient, sometimes being audible when he is standing, at others when

he is recumbent. In making this somewhat dogmatic statement I would exclude cases due to rheumatism, for it is probable that these really belong to the class of structural disease, either the endocardium or myocardium being affected. In these cases the inception of a new rhythm is frequently met with, as also some cardiac enlargement.

The Origin of the Disorder.

Many circumstances have been assigned as the cause of the condition; foremost amongst them is the presence in the blood of the toxins of acute infections, especially influenza, but shock, the absence of basic salts in the blood, and other causes have also been suggested. Reflection on the characteristic features of this disorder leads us to believe that it is not due to any affection of the heart itself, interfering with its power of generating stimuli within itself, its faculty of conducting them or its power of contraction, but to something which affects its nervous control. In affections of the myocardium or the conducting paths in the heart we always find some increase in size of the organ, and the inception sooner or later of a new rhythm such as auricular fibrillation, followed eventually by "back pressure symptoms"; these features, in my experience, never occur in cases of irritable heart.

If, then, we conclude that the condition is due to interference with the nervous control of the heart, it must be due either to weakness of vagus action or over-stimulation of the sympathetic. Every medical officer who has served during the war has had cases in which the history could leave no possible doubt that the tachycardia was noticed for the first time after some severe shock, such as a shell explosion in close proximity to the patient, who, before it, was perfectly well. It is the same condition as that which supervenes on fright or shock in all stages of life, more especially in children. It has always been supposed that this latter condition is due to suppression of vagus control, and it is reasonable to suppose that the condition of irritable heart in soldiers is due to the same complex, which, instead of being temporary, persists.

If this view is accepted, I suggest that a more accurately applicable and more scientific name for this symptom-group would be "vagasthenia." A condition of vagotonia in which we get hyperactivity of the vagus mechanism has been described, more especially by Continental writers; why should we not use a name which describes an affection in which an opposite set of factors is at work?

Treatment.

The recognition of this malady as a neurosis gives us an important guide to its treatment. It may be that the methods of the psycho-therapist may meet with the same good results which have attended them in the other forms of neurosis. So far the only method of treatment giving good results has been the employment of graduated exercises, and I believe that these results are due to suggestion, or rather persuasion, as practised by the psycho-therapist, rather than to the effect of exercises on the heart muscle itself. Is it not irrational on any other ground to increase the work of the heart muscle, which is already doing a double amount of work in contracting constantly at almost double its normal rate? May we not hope that a further stage of this treatment—namely, psycho-analysis—may reveal some forgotten shock or emergency in early life which is at the bottom of the trouble, as in so many cases of neurosis which exhibit paralyses, phobias, etc.? My experience in the early stages of the war, when men joined voluntarily and so had not the terror of conscription before them, was that very great numbers suffered from irritable heart from the beginning of their training. Probably they had had it for years previously; it was only when they were called upon for the extra effort entailed in training that they found themselves unfit—that is to say, training did not cause but revealed it.

It is because I feel that ideas generally concerning D.A.H. are so confused, and that the retention of the name D.A.H. tends to perpetuate that confusion, that I put forward the suggested name vagasthenia, in the hope that it may elicit an expression of views from others better qualified than myself to speak on the subject.

ACUTE SUFFOCATIVE CATARRH.

BY

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HAVING read the reports of cases of this condition in recent numbers of the BRITISH MEDICAL JOURNAL, I think it may be useful to publish summaries of similar cases which I have attended since 1914.*

Case 1 occurred in a male of 63, who suffers from Bright's disease, and whose blood pressure is 200 mm. Hg.

He partook of a heavy meal at 6 p.m., and shortly after stood for ten minutes in a cold wind. Having gone in he felt distressed; he was almost immediately seized with urgent dyspnoea, and began to cough up copious brownish frothy expectoration, which flowed from the nose and mouth. His complexion was dusky. He was relieved in ten minutes by hypodermic injection of morphine and atropine and by amyl nitrite inhalations.

Case 2 was that of a woman of 82, suffering from mitral regurgitation.

In November, 1915, two hours after taking a heavy supper, she awoke with intense dyspnoea, rattling in chest, feeble rapid irregular pulse, intense pallor and sweating, and constant cough without expectoration. Râles were audible in the upper part of the chest. She was relieved by injection of morphine and atropine, and digitalin given by the mouth; the chest was clear next day. On February 24th, 1916, a similar attack occurred, and was relieved as before. The patient died in 1917.

Cases 3 and 4 occurred in patients of about 65, who were hearty eaters.

In both there was a sudden attack of dyspnoea with cough and rattling in the chest, but no expectoration; râles were audible, chiefly over the upper portions of the lungs. Relief was obtained by injections of strychnine and by inhalation of amyl nitrite. Case 4 died seven months afterwards of heart failure with dropsy.

In *Case 5* the patient had suffered from angina pectoris for five years.

From January, 1917, to 1919, his anginal attacks were frequently accompanied by rattling in the chest and oedema of the lungs, with constant dry cough; râles were limited to the upper part of the chest. The attacks usually lasted about an hour, and were relieved by chloral and nitroglycerin, together with amyl nitrite inhalations. He died early this year after an attack of pericarditis.

Case 6, a male of 69, had suffered from bronchitis.

Two hours after retiring he woke suddenly and exhibited cyanosis, dyspnoea, and copious secretion of a brownish-red frothy fluid, which filled the nose and mouth. He was relieved by strychnine and amyl nitrite, and remained fairly well until his sudden death a month afterwards.

Case 7, a man of 54, suffered from aortic regurgitation.

Urgent dyspnoea, with cyanosis, constant cough, and expectoration of a small amount of stained frothy fluid, appeared suddenly at 5 a.m., and were relieved in half an hour by amyl nitrite, nitroglycerin, and brandy. Five hours afterwards the chest, in which continuous "rattlings" had been audible, was clear. He had many subsequent attacks of dyspnoea, in none of which was pulmonary oedema detected. He died five months afterwards (heart failure accelerated by pulmonary embolism).

I have also met with two similar cases in consultation. In both of them the blood pressure was greatly raised; one was relieved by venesection.

In many of the milder cases of this condition the oedema was noted to be limited to the upper part of the chest, and not the basal region, as one would have expected if heart failure were the sole cause. The combination of the three factors—high blood pressure, cold winds, and indiscretions in diet—appears in some cases to act as an exciting cause. If one includes under the heading of "acute suffocative catarrh" the milder forms of this pulmonary oedema the condition is not uncommon.

* The clinical notes have been condensed.

ACCORDING to the official directory for 1920, Luxembourg possesses 129 doctors, 24 dentists, 40 chemists owning a shop and 54 without a shop, 2 druggists, 42 veterinary surgeons, and 199 midwives. At the frontier 19 doctors, 4 veterinary surgeons, and 25 midwives of Luxembourg nationality are allowed to practise in France, and 7 doctors and 25 midwives resident in France have similar permission to practise in adjacent Belgian territory.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF ENCEPHALITIS LETHARGICA.

THE following case, diagnosed as encephalitis lethargica, is of interest partly because of the bacteriological findings and partly on account of the treatment by sodium salicylate given intravenously in fairly large doses.

Abstract of Clinical Notes.

The patient, an adult Indian follower, was admitted without notes or history to a stationary hospital on January 17th, 1920. His pulse was 96, his temperature was 100.4°; the respirations were 26. His general condition was stuporose; he lay still, with expressionless face and closed eyes.

The ocular conjunctiva was congested; no strabismus was present; the pupils were medium sized and equal, contracting to light. There was a considerable degree of general muscular tension and irritability, the arms and legs being flexed. Rigidity of the neck and Kernig's sign were absent. Subsequent records are given below.

Fourth day: Slight improvement. Can be roused, when for a time he is intelligent and talkative, but suddenly reverts to lethargy. Photophobia; knee-jerks increased, Babinski's sign absent.

Sixth day: Not so well, cannot be roused. Constant muscle twitchings, general, but best seen in pectorals and hand and finger muscles. Bouts of hiccough. Extreme myoedema. General rigidity increased; sphincters not under control. Blood examination: 9,000 leucocytes per cubic millimetre, no malarial parasites. Sod. salicyl. gr. 3 in 20 c.cm. saline given intravenously; gr. 10 t.d.s. by the mouth.

Seventh day: Patient pulseless, pituitrin given in two injections.

Seventh to seventeenth day: The stupor persisted in varying intensity. Ptosis of the eyelids, lagophthalmos, slight external strabismus on the right and deviation of the tongue to the left were noticed, and attacks of muscular twitching continued to occur; between them the position of tetany was sometimes noticed. Complaint was made of pain in the eyes, mouth, and throat, and of failing vision. Cultures were made from a naso-pharyngeal swab; influenza bacilli were found, together with a few pneumococci. The cerebro-spinal fluid, clear and not showing increased tension, contained a few lymphocytes but no organisms. The injections of sod. salicylate (gr. 1½ to gr. 4) were repeated on the seventh, eleventh, and fifteenth days.

On the seventh day a blood culture was made on broth; the report showed the presence of Gram-negative bacilli a little larger than *B. influenzae*, inclined to lie in pairs. A second culture, made on the fifteenth day, contained no organism; possibly the first finding was due to contamination.

Seventeenth day: There was very noticeable improvement; he was less stuporose, and sat up; the rigidity began to disappear, and the ptosis and strabismus to diminish. His appetite returned.

On the thirty-fourth day he was almost well, except for incessant loquacity. The temperature had never risen above 100.4°.

It is noteworthy that in December, 1919, another patient in this hospital who was convalescent after what seemed a typical attack of influenza and had had a normal temperature for nine days, suddenly complained of inability to open his eyes. In the course of a few days this became worse, and gradually there set in a train of symptoms similar to the above. One intravenous injection of sod. salicyl. (gr. iij in 20 c.cm. saline) was given, and some slight improvement followed. Unfortunately this patient passed out of observation soon afterwards. I have since heard that he made a good recovery.

It has been generally noticed here that many patients convalescing after an attack of influenza have complained of heaviness in their eyelids, and have shown a great tendency to drowsiness.

I have to thank Captain Adler, R.A.M.C.(S.R.), who did the bacteriological work, and Colonel Kennedy, R.A.M.C., who verified the findings; also Colonel Mackelvie, I.M.S., for permission to publish these notes.

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GONORRHOEAL VULVO-VAGINITIS IN A NEWBORN INFANT.

AN infant, 14 days old, was brought to me for examination. The history was of a vaginal discharge beginning a few days after birth, very slight in amount, but increasing steadily and becoming more purulent. There was no evidence of the child having dysuria or being in any way upset by the local condition. She was otherwise healthy, but inflammation of the vulva was seen, and after the child's straining a little on micturition a rush of green pus from the vagina occurred. A film from the vagina was taken at once, and the pathological report was: "Pus and numerous gonococci present."

The child was born in a Poor Law institution, and details of labour, chart, etc., were easily procured. The mother's genital tract had appeared normal before, during, and after labour. Delivery was easy, though the presentation was breech. The mother's recovery was uneventful, not the slightest pyrexia appearing on the chart. She herself looked normal locally, but gonococci were found in films from the cervix.

The infant's infection was undoubtedly contracted during labour, and the interesting points are:

1. The infection of the child's presenting part.
2. Total absence of ophthalmia.
3. Child's general good condition and lack of malaise, though the local infection was severe.

There was no possibility of infection having taken place after birth, as the case was still in the maternity wards, where the child's toilet was wholly performed by pupil midwives.

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Reports of Societies.

OPHTHALMOLOGICAL TEACHING.

THE annual congress of the Ophthalmological Society of the United Kingdom was held at the house of the Royal Society of Medicine on April 29th. The President, Mr. J. B. STORY, P.R.C.S.I., took as the subject of his presidential address the teaching and examination of medical students in ophthalmology. He said:

The Council of British Ophthalmologists have already urged the General Medical Council to adopt two reforms—first, to make three months' attendance at an ophthalmic clinic obligatory and secondly, to have an examination by ophthalmic surgeons as part of the final pass examination. The General Medical Council accepted the first and rejected the second, a most astonishing thing to those who know well that medical students have no time to waste on subjects that are not necessary and in which examination is not compulsory. There are two reasons why a certain knowledge of ophthalmology is necessary for every person permitted to practise—(1) because the vast majority of practitioners cannot escape from having to diagnose and treat diseases of and injuries to the eyes when no specialist can be obtained, and (2) because in many serious diseases the evidence afforded by ocular conditions is most important, and often the ocular symptoms are those which induce the sufferer to seek medical advice. For instance, interstitial keratitis may be the first evidence of infantile syphilis, even before the eruption of the teeth described by Jonathan Hutchinson; and acquired syphilis may show itself in the choroid, iris, or retina long after the patient has forgotten the primary disease completely. Ocular tuberculosis may be the first visible manifestation of that disease, and the ocular signs are important in tabes, disseminated sclerosis, meningitis, and other intracranial lesions, diabetes, nephritis, arterio-sclerosis, to mention only a few serious and not uncommon affections. In many of these the ocular signs may be mainly naked-eye appearances or fairly easily observed ophthalmoscopic lesions. The final decision of the General Medical Council is said to be that the hospitals should, or may, refuse certificates to students who do not acquire sufficient knowledge—thus shuffling off the responsibility thrown on it by Act of Parliament and placing it, not on the licensing bodies over whom it has control, but on the medical staffs of hospitals. It has been objected that if an examination in ophthalmology is instituted at the Final, it will overload the curriculum, and that other special branches of surgery will claim a similar privilege. As regards the first objection, the special clinical examination has been the rule in every one of the Irish licensing bodies for some thirty years, and has not caused overloading. As regards the second, it has been already pointed out how great is the importance of ocular signs and symptoms in serious constitutional diseases, an importance much greater than can be assigned to any of the other organs usually taken up as specialties. Ophthalmic surgeons are not narrow-minded, and would certainly urge that every medical man should be able to

recognize anomalies of ear, nose, and throat which can be seen with such simple instruments as the common head mirror and aural speculum.

The President, in conclusion, insisted upon the necessity of a practical clinical examination, because, in his experience of thirty years as an examiner, he had found students whose book knowledge was perfect unable to diagnose quite simple ocular anomalies in the patients before them. The General Medical Council, he said, should be urged by the Society to consider its recommendation and institute the following reforms: (1) That each candidate for a licence to practise should be compelled to attend an ophthalmic clinic for a period of three months; (2) that the final examination should include as a separate pass subject a clinical examination by ophthalmic specialists. If the Ophthalmological Society were unsuccessful he hoped the general practitioners throughout Great Britain would take the matter up.

TREATMENT OF ANTE-PARTUM HAEMORRHAGE.

A CONJOINT meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine with the North of England and Midland Obstetrical and Gynaecological Societies was held in London on May 6th. In the morning a discussion on "The treatment of ante-partum haemorrhage" was introduced by Dr. HASTINGS TWEEDY, of Dublin, and in the afternoon Dr. EARDLEY HOLLAND read a paper on "Rupture of Caesarean section scar in subsequent pregnancy or labour." The chair was occupied in the morning by Mr. J. E. GEMMELL, of the North of England Society, and in the afternoon by Mr. CHRISTOPHER MARTIN, of the Midland Society.

Dr. HASTINGS TWEEDY said that it was an error to consider all ante-partum haemorrhages, other than those arising from placenta praevia, as accidental, yet this was a mistake commonly made by nurses and students. It was of great importance to determine the amount of loss which brought the condition within the category of accidental haemorrhage. At present various standards were used in the compilation of different statistics, and the comparison of results, therefore, was rendered difficult. In the Rotunda Hospital at Dublin the term was now not used unless the bleeding was sufficient to necessitate the presence of an assistant master, who was not summoned unless his presence was required in the interest of the patient; many insignificant bleedings thus escaped being recorded. During the speaker's entire mastership he reported but 49 cases of accidental and 45 of unavoidable haemorrhage in 13,924 deliveries, and in the extern maternity 47 haemorrhage cases in 15,543 deliveries. Sir William Smyly, in his first hospital report, adopting a different standard, recorded 44 cases in 3,600 deliveries, most of the cases being of little consequence. Amongst his own 49 patients who had accidental haemorrhage, Dr. Hastings Tweedy said that 22 were in serious danger, and were treated by the vaginal plug. He lost two of his hospital patients, the deaths probably arising from intraperitoneal haemorrhage, and seven of the extern maternity patients died, in five of whom the plug had been employed. In 1915 he returned to the Rotunda, and, in conjunction with Sir William Smyly and Dr. Purefoy, carried on the work of the institution for three years, when 23 cases of accidental haemorrhage were encountered. They were then in possession of the knowledge that accidental haemorrhage might arise as a result of pregnancy toxaemia, and this permitted them to perform Caesarean section when the double complication existed in a severe form. Altogether, his hospital experience comprised 72 cases of accidental haemorrhage in over 18,000 deliveries, with only two deaths; 30 of these cases were plugged. Berkeley and Bonney had expressed a doubt whether plugging could have any directly useful effect in concealed accidental haemorrhage, with the accompanying uterine inertia. A plug applied in the manner recommended by these authors, said Dr. Tweedy, would not compress the vessels, for they applied the plug with the aid of a speculum and a forceps, and used for this purpose rolls of cotton, each tied round with a string to facilitate removal. Dr. Tweedy strongly maintained that compression was accomplished with the plug which he applied, and that he had demonstrated this principle during the performance of severeal Caesarean sections.

To plug efficiently the left hand should be passed into the vagina, the tips of the fingers lying behind the cervix. Small pieces of cotton-wool, squeezed out with lysol solution, and each the size of the thumb knuckle, were then taken and inserted by means of the right hand around the cervix. The fingers of the left hand were kept busy squeezing the pellets into a compact mass and forcing the spaces between them to permit the insertion of still another plug. This process was continued in a systematic manner from above downwards until the vulva was reached and the vagina could hold no more. A T-bandage was applied to keep the plug in position and an abdominal binder was fastened tightly from above downwards to press the side walls of the uterus against the vaginal dam, and this completed the operation. To what extent intraperitoneal haemorrhage could be controlled by a vaginal plug was still a matter of doubt. In the vicinity of the internal os the control was complete; on the other hand, it would fail entirely to stop a leakage from the ovarian artery. The latter supplied a relatively small amount of blood to the placenta, chiefly flowing to its upper portion where detachment was rare. When the main supply was cut off the loss on blood pressure promoted coagulation in the sinus.

Dr. Tweedy added that hysterectomy had no place in the treatment of accidental haemorrhage, and finally it might be stated that rupture of the membrane did not contraindicate plugging the vagina.

The CHAIRMAN (Mr. Gemmell) said that he had only carried out this method of treatment in one case some years ago, and the procedure was eminently successful. The old surgical axiom, "Put your finger on the bleeding spot," should be remembered; to put the finger on the bleeding spot in accidental and unavoidable haemorrhage was difficult, but there were means towards that end. In severe cases of accidental haemorrhage where blood clot remained behind the placenta a certain amount of inertia of the uterus always resulted, and played an important part in allowing the haemorrhage to go on. To plug the vagina successfully it was necessary to have hands accustomed to vaginal work; it could hardly be expected of the ordinary practitioner.

Dr. FLETCHER SHAW congratulated Dr. Tweedy upon the results of the Dublin method. It was an extremely good treatment for accidental haemorrhage, but in Manchester they adopted another method—rupturing the membranes, putting on a tight binder, and probably giving ergot, and he thought the results quite as good by this method as by the other. It must be remembered that in a large maternity hospital, while, of course, the treatment of the patients had primarily to be considered, the teaching of students had to be considered too. These men and women were going into practice, where they would get occasional cases of accidental haemorrhage, probably occurring in the very worst possible surroundings. There was nothing more alarming to the practitioner than to have haemorrhage. It seemed so essential that it must be stopped; every other consideration went by the board, and the treatment which had been taught to that practitioner in his student days presented itself naturally as the method to be carried out. The practitioner found a case of accidental haemorrhage; possibly he had not had a case for years, and was not prepared with sterilized material. If he had been taught to pack he used what he had at hand. Those who worked in maternity hospitals received cases in which the sepsis was appalling, the result of unfortunate packing. He had seen strips torn from bed sheets and just dipped in some antiseptic solution; one case was packed with a dish-cloth. With packing in this careless manner a large number of septic cases were bound to arise. He himself, however, did not use packing, and did not teach students to use it; the other method was quite as efficacious, and could be carried out without anything like the same amount of risk. There were but few cases in which haemorrhage could not be stopped by either of these methods. In 1916 he described six cases requiring abdominal section and hysterectomy, but he had not had a single case since. In the case of unavoidable haemorrhage, Caesarean section was used nowadays very much more frequently than formerly; there were undoubtedly a number of cases in which it ought to be used for placenta praevia and other conditions. If the patient had a fair amount of haemorrhage and the child was alive, and there was not much dilatation of the cervix, Caesarean section was the treatment to be generally adopted.

Dr. HERBERT WILLIAMSON gave some statistics gathered from the maternity ward of St. Bartholomew's Hospital.

The ward was opened in February, 1911. Between that date and the end of July, 1919, 2,600 patients were admitted. Among these were 98 cases of ante-partum haemorrhage; these figures were of no value in determining frequency, because the great majority were sent in on account of the bleeding, and but for the haemorrhage would have been delivered elsewhere. Fifty of these cases were accidental haemorrhage and 48 placenta praevia. Of the mothers with accidental haemorrhage, 47 recovered and 3 died, and of the children 27 were born alive and 23 dead. Of the cases of unavoidable haemorrhage 12 were central, 27 lateral, and 9 marginal placenta praevia. Of these mothers 45 recovered and 3 died, and of the children 16 were born alive and 32 were stillborn. Amongst the accidental haemorrhage cases 17 were suffering from albuminuria, and amongst the placenta praevia cases 3. Local infection in the puerperium was manifested in 12 per cent. of the accidental haemorrhage cases and in 25 per cent. of the placenta praevia. Of the whole 98 cases 37 were delivered without interference, the procedure being rest in bed, injections of morphine, etc.; these patients, of course, remaining under exceptionally favourable circumstances. This same treatment, with ruptured membranes in addition, was carried out in 8 cases; bipolar inversion and bringing down a leg in 11 cases; manual dilatation of cervix and forceps delivery in 3 cases; Champetier de Ribes's bag in 18 cases; Caesarean section in 3 cases; and plugging of vagina and application of abdominal binder in 18 cases, of which 11 were cases of accidental haemorrhage and 7 were cases of placenta praevia. The cases selected for plugging were those in which uterine contractions were not present and the cervix was not sufficiently dilated for bipolar version or the introduction of the Champetier de Ribes bag. Plugging was done under an anaesthetic, and instead of using little pledgets as Dr. Tweedy did, narrow strips of gauze were employed. The result of the plugging was that in 8 cases—of which 3 were placenta praevia, 2 external accidental haemorrhage, 1 concealed accidental haemorrhage, and 2 mixed accidental haemorrhage—the bleeding was arrested, labour pains excited, and no further treatment required; in 3—1 of placenta praevia, and 1 of external and 1 of mixed accidental haemorrhage—the bleeding was arrested but no labour pains were excited; in 3—2 of placenta praevia and 1 of external haemorrhage—the bleeding was arrested for a time but recurred after an interval; in 4—2 of placenta praevia, 1 of concealed and 1 of mixed accidental haemorrhage—the haemorrhage was not arrested and the treatment was abandoned in favour of other methods. Amongst these 18 cases there were 2 deaths, but he did not believe the lives of these women could have been saved had any other line of treatment been adopted. Of the children, 13 were stillborn, 4 were born alive, and in 1 case the patient died undelivered.

He regarded the plugging of the vagina as a valuable method. By its application the bleeding would be arrested in the majority of cases. It was by no means infallible, however, and those who employed it must be prepared to meet with disappointments. He now taught that, excluding cases of concealed haemorrhage of the toxaemic variety (which, in his opinion, should be treated by Caesarean section), where uterine contractions were not present and there was no dilatation of the cervix, if simple measures had failed to arrest the bleeding plugging should be employed. Where the cervix was sufficiently dilated to admit two fingers it was better either to practise bipolar version or to introduce the Champetier de Ribes bag. Dr. Williamson added that the method of blood transfusion in severe ante-partum and post-partum haemorrhage was important, and suggested that those working in hospital maternity departments should have their blood tested to determine their suitability as emergency donors.

Dr. BLAIR BELL believed that plugging was valuable, but he could not agree as to the action attributed to it by Dr. Tweedy. The speaker was positive that with fairly high blood pressure it was a physical impossibility to compress the artery, and many believed that even if they were to tie the uterine arteries in these cases it would not stop the haemorrhage. It was unfortunate that there was no animal on which the experiment could be made except the pregnant chimpanzee; and the ape did not breed in this country, so that the experiment would have to take place in Africa. He suggested another explanation: When a woman was in labour the mere introduction of the fingers into the vagina would stimulate a uterine contraction; in the same way it was possible that contraction was stimulated by plugging. He believed that the plug as used by Dr. Tweedy combined with the binder above would compress the fundus uteri, apart from causing strong uterine contraction. In severe accidental haemorrhage pituitary extract in not too big a dose seemed worthy of trial. In placenta praevia he believed that Caesarean section was the only satisfactory treatment.

Dr. HERBERT SPENCER insisted that many cases of so-called accidental haemorrhage were of very slight significance indeed. Those who had not a large experience might think it necessary to do Caesarean section in large numbers of accidental haemorrhage cases, but he believed that Caesarean section was rarely required for accidental haemorrhage or for placenta praevia. By tradition and practice he was not quite in favour of Dr. Tweedy's method of vaginal plugging, but in Dr. Tweedy's hands there was no doubt it had had good results. He felt with Dr. Shaw, however, that there was a certain danger in teaching students to do the plugging. Long ago in the maternity ward he saw more than 100 cases of ante-partum haemorrhage in six years, but very few were really grave cases of accidental haemorrhage or needed any treatment beyond ordinary mild measures. It was a very grave thing indeed to do hysterectomy for an accidental haemorrhage, though there might be occasions when this was required. In a very large experience of placenta praevia the only cases in which he thought Caesarean section was indicated were those in which the child was alive, a large quantity of blood had been lost, the os was not dilated, and the placenta was central.

Dr. W. E. FOTHERGILL was perfectly sure that most obstetricians, if they had seen what he personally had seen, would not teach students to pack at all for any condition of obstetric haemorrhage. The constant occurrence of sepsis after packing was quite enough to restrain him from saying anything about packing to students. The tragedies he had seen through the packing done by practitioners outside, before the cases came into the hospital, had impressed him very greatly, and he believed the practice would gradually die out of use; he considered it obsolescent, if not already obsolete. What they taught midwives to do was very much more important than what they did themselves, and he suggested certain respects in which the examination of the midwife was not as satisfactorily conducted as it might be.

Dr. GORDON FITZGERALD, referring to the obvious division of schools with regard to the proper treatment of accidental haemorrhage, thought there was too marked a tendency to stamp this or that school as the champion of this or that line of treatment without any reference to the different behaviour of the uterus at the time when the haemorrhage occurred. If the uterus was contracting—that is, if the patient was in labour—when the haemorrhage occurred, he did not think they were on contentious ground at all; those were the cases which might be classed as slight, and the uterus would do all that was necessary apart from plugging or similar treatment. As for concealed accidental haemorrhage, there were very few obstetricians who had seen a large enough number of true cases to have gained any reliable basis of opinion as to a proper course of treatment. The extirpation of the uterus might be necessary and justifiable. In all cases of concealed accidental haemorrhage he would do Caesarean section, and if the retraction of the uterus was not satisfactory he would go on to extirpation. The extreme rarity of the condition, however, made it out of the question to be dogmatic.

Dr. T. W. EDEN said that he had seen few cases of ante-partum haemorrhage. It was very important that the methods of treating accidental haemorrhage which students were told to adopt in practice should be taught to those students in hospital. The thing that mattered from the general point of view was, as Dr. Fothergill had said, not what was done in the hospital but what was done by practitioners, and the teaching that plugging was the best line of treatment for accidental haemorrhage must involve the demonstration to the students of how to do it. He had never yet seen a case sent into the hospital plugged which was in the least efficiently plugged. He hoped that there would be some outcome of this discussion with regard to the relation of Caesarean section to placenta praevia. If some conclusions could be formulated as to the class of case which could be treated by Caesarean section it would be a great help to teachers and to general practitioners.

Dr. SYDNEY RUMBOLL said that in the hospital where he worked the plugging method was followed. In every case of accidental haemorrhage which he thought required plugging the patient was put under an anaesthetic, and after a most thorough cleansing of the vagina the plugs were carefully introduced. He would never teach nurses to plug. Plugging, he believed, ought only to be carried

out in a special institution—either a surgical home or a hospital. In the majority of cases of placenta praevia plugging was the best treatment; in other cases Caesarean section might be employed.

Dr. GORDON LEY said that at the City of London Maternity Hospital during the war in the majority of cases of placenta praevia the practice of external version and bringing down the leg was effective. The mortality of the mothers was infinitesimal, and about two-thirds of the babies were born alive. Caesarean section, he thought, should only be done in placenta praevia when the cervix was not dilated, the patient was at full term, and the baby was alive.

Dr. R. G. MCKERRON was convinced that plugging was the best method of dealing with severe external accidental haemorrhage. He always taught his students to use the plug as the most effective method they could employ.

Dr. MUNRO KERR said that the advantage of external version in placenta praevia was not only that the manipulations inside were less, but also that the placental site was less disturbed, and therefore the chances of infection were diminished. The great argument in favour of Caesarean section for placenta praevia was the improvement of infant mortality. He did not think that by Caesarean section it was possible to improve the maternal mortality save in exceptional cases. He was sure that Caesarean section would be employed in placenta praevia more frequently in future. Why were so many children born dead after placenta praevia? If that question were investigated in the light of hospital records it would be found that a considerable number of children were lost after version in placenta praevia cases because the delivery of the child had been hurried. It was swinging between life and death, and it was very undesirable to hurry the delivery. To drag on the child too early might be a fatal interference. With regard to accidental haemorrhage, he had employed plugging very extensively. He agreed that in very few cases was Caesarean section necessary in accidental haemorrhage. But there were a few such cases. He thought it possible, as Dr. Gordon Ley had suggested, that the use of pituitary extract and rupturing of the membranes might be an alternative to plugging.

The CHAIRMAN, in summing up the discussion, remarked that it might now almost be said that Caesarean section could be done with as little chance of mortality as ordinary labour. In dealing with placenta praevia where they had a closed surface, and particularly when they were dealing with a primipara, Caesarean section ought to be the treatment of choice. At all events that treatment should be borne in mind, granted that there were good nursing homes and hospitals available.

Dr. HASTINGS TWEEDY, in a brief reply, said that the danger of sepsis in plugging the vagina was a real one, and this was one of the reasons why he emphasized the methods of plugging. Every nurse and student should be taught to plug. It was the one treatment that was available to nurses in bad cases of haemorrhage where a doctor was not at hand. In dozens of cases, in outlying parts of Ireland and Scotland, a nurse was left to herself while her patient was almost dying. The difficulty about aseptic material was not so great as had been suggested. A sheet could be torn in small pellets, and these boiled in a saucepan. It was extraordinarily easy to get aseptic materials. Even in a hovel, attending a midwifery case, the first thing to be done was to get the pot boiling on the fire, and there was no excuse for a man with this resource plugging unaseptically. If he did, it showed that his teachers had not done their duty. As for midwifery, his experience was that the midwives knew their work a great deal better than the students. The majority of practitioners were not able to send their cases into the hospitals, and this plugging offered them an extraordinarily efficient method. Several speakers in the discussion had said that plugging could not control the uterine artery. But they spoke on theoretical grounds. They had not put the thing to the test. It was a pious belief repeated at every meeting he attended. But he had found that it did control the uterine artery, and this was not the result of his own observation only, but also that of Sir William Smyly and Dr. Purefoy, who had been with him in Caesarean sections for haemorrhage. In Dublin at all events there was now a general belief that the plugging actually did stop the pulsation of the uterine artery.

(To be concluded)

THE PEPYS OF MEDICINE.

THE annual oration before the Medical Society of London was delivered on May 10th by Sir D'Arcy Power, K.B.E., who took for his subject "The Rev. John Ward and Medicine."

Ward, who was vicar of Stratford-on-Avon in the reign of Charles II, was versatile and curious, and loved experiment. While in London he had attended the lectures of Sir Charles Scarborough at the Barber-Surgeons' Hall, had visited the hospitals of St. Thomas and St. Bartholomew, and had made inquiries about the cost of foreign medical degrees. He treated gratuitously his parishioners of the humbler ranks, although there was an apothecary and at least one physician in Stratford during his incumbency. From time to time he did a little minor surgery, and he followed the surgical aphorism, "Allways lay a wound open, whether it bee fresh or ulcerated." He seemed to have some idea of the metastasis of cancer, for he spoke of glandules arising in other parts among people who thus suffered. On pleurisy and effusion he wrote: "When an incision is to be made into ye breast open it betwixt ye 3rd and 4th ribb reckoning upwards, yt is just above ye diaphragm, and to yt perhaps apply a Caustick wch is very strong and will eat through ye muscle; yn make an Incision and keep itt open with Tents."

Among the epidemics from which Stratford people suffered during Ward's incumbency were small-pox, measles, and plague. The difficulty of distinguishing between small-pox and chicken-pox did not escape him. On plague he made several observations—one that "itt was observed yt fat people catch itt sooner but lean people died 2 for 1." Some interesting facts about Greatrakes, the "stroker," or faith healer as he would be called to-day, were given in Ward's diaries. This man tried his cure on Lady Anne Conway, without success in her case, though he relieved many persons in the neighbourhood, so that Dr. Stubbs, the physician at Stratford, wrote a volume in favour of his cure.

From the details given by Ward of the illnesses of his neighbours and parishioners, it was sometimes possible to make a diagnosis, as, for instance, in the case of Dr. Gordon, Bishop of Exeter, and later of Worcester, who died of a stoppage of the urine which was supposed to be stone, but no stone appeared, only "two pieces of flesh growing one against another in ye neck of the bladder yt ye urine could not pass"—doubtless a case of enlarged prostate. Ward occasionally made an effort to generalize from the particular; thus he said: "Whether a great desire to live which some persons manifest uppon their sick beds, as also a willingness to take anything wch before they refused is not a sign they are tending to their long home." In Ward's own opinion, and probably that of his neighbours as well, he was very skilful in urinoscopy, and made many entries on that subject. He distinguished clearly between syphilis and gonorrhoea, which were rife at Stratford during his incumbency. Death did not end the interest which Ward took in the bodies of his parishioners. He gave many details of embalming.

Perhaps the most interesting observations in Ward's notebooks were his references to Willis, Lower, Robert Boyle, and others of his contemporaries, who were personally known to him as graduates at Oxford. Lower's classical experiments on transfusion, suggested by Christopher Wren's injection of various drugs into veins, were recorded by Ward. Of Sydenham, Ward wrote: "Dr. Sydenham advises a vomit two hours after a gentle dinner; after vomiting hee gives a narcotick potion or Bolus to allay ye tumult yt ye vomit hath made." Other entries related to Sir Charles Scarborough, Sir Francis Prujean, and Sir Alexander Frazier, of whom "the King hath a high opinion . . . and says all ye physicians are fools to him." The properties of opium, laudanum, and antimony were the subject of much inquiry at this time, and Ward made several allusions to these drugs. "Starkey told me that ye sleeping properties of opium may bee separated so as to make itt a hinderer of sleep, but ye sudorific and anodyne qualities cannot."

His observations showed Ward to be a man of great versatility at a time when the prevailing type of mind was versatile. In many respects he was a true disciple of Boyle. He would have made a good practitioner had he given himself entirely to medicine, and he would have advanced the science of physiology. Boyle interested him in the new chemistry, and his restless curiosity led him into metallurgy and the more dangerous quest of the philosopher's stone. But with all this he was a dilettante, spoiled, probably, by the possession of a competency, hampered perhaps by ill health, for he was certainly ruptured, and died at the age of 52, probably of phthisis.

Reviews.

THE SURGERY OF THE BREAST.

ABSORPTION in the war held up the progress of European surgery in every direction but that immediately concerned with it. The investigations of civilian surgery ceased for the time, and any advance made has been due to the implanting of the ideas of war surgery on the surgery of civil life. On the other side of the Atlantic for a long period of the war civil surgery progressed unimpeded. Some of the fruit of that progress we find in the monumental work before us, the review of which, we regret, has been unavoidably delayed. This volume on the *Breast: Its Anomalies, its Diseases, and their Treatment*,[1] is the joint production of Professor JOHN B. DEAVER and Professor J. MCFARLAND, with the assistance of Dr. J. LEON HERMAN. The result of the collaboration of a surgeon and a pathologist with an anatomist is that the subject is treated with infinite elaboration, meticulous care, and overflowing wealth of detail.

We may pass lightly over the chapter dealing with the anatomy, and its intricate description of the lymphatics of the breast, and also over those concerned with polymastia, amastia, gynemastia, polythelia, hypertrophy, actinomycosis, and sporotrichosis. Sufficient is it to say that they are each most copiously illustrated with pictures and statistical tables, that each contains not only references but short abstracts of cases recorded in literature. The inquiring surgeon will find in them all the available information possible to collect into one volume. We may here say that the work is not intended to meet the wants of the practitioner, into whose range breast cases come only once in a while; its appeal is to the operating surgeon, called upon, as he is, to decide as to the nature of the condition of the breast, to advise for or against operation, and to plan any requisite operative procedure.

It is a notable feature of the book that a serious attempt is made to simplify the nomenclature of many of the diseases of the breast. This need for simplification is nowhere more apparent than in the big section of these diseases classed as "cystic disease of the breast." Apart from the cystic conditions recognized by all writers, such as galactocele, serous cysts, hydatid cysts, there is a large class which, in this country, we have been inclined to regard as more or less connected with chronic mastitis. The complete nomenclature discovers at least twenty different names for this condition. The authors of this work advocate strongly that the suggestions made by Warren should be followed, and these cystic changes all placed together as changes brought about through abnormal involution. They go on to present the argument:

> The breast tissue is restless; it is acted upon by a variety of agencies, is stimulated to grow or its growth inhibited according to circumstances known or unknown. The result is disturbance of structure and function whose extreme departures from the normal constitute abnormal involution and are supposed to prepare the way for, if not directly lead into, the epithelial invasion of the malignant character that we know as cancer. There is no inflammation; or, any coexisting inflammation is incidental and accidental. There is no tumour, or if there be, it is either incidental, papillary formations in the cysts, or consequential, cancer.

It is these cases which present the greatest difficulty in diagnosis. Probably every surgeon has had experience of removing a breast for "early scirrhus" which proved on microscopic examination to be simply cystic disease. Clinically some of these cases are not distinguishable from early cancer. Even if the expedient of making a microscopic examination within the operating theatre at the time of operation is followed, a mistake may be made—unless the *whole* tumour mass removed is submitted to examination—for we learn that cystic disease from abnormal involution and a small cancerous nodule may coexist in the same breast and this nodule may be missed. Further, "abnormal involution" may possibly be a process secondary to "squamous-cell carcinoma, tuberculosis, and other chronic diseases." As "abnormal involution" may be accompanied or followed by carcinoma in one case in every ten, the importance of making a correct decision in any individual case is very obvious. The treatment will consist in subcutaneous excision of the breast or in conservative amputation of the breast with the axillary contents.

The most important of all breast diseases—carcinoma—is discussed as fully as any of the others. Indeed, the chapters are themselves a complete treatise on the subject. The authors ask for a simpler classification, and suggest that all the names of cancer of the breast be reduced in number from the fifty-four varieties which they give as having been found in literature to six: scirrhus or hard cancer; encephaloid medullary or soft cancer; carcinoma simplex (something between the two preceding forms); adeno-carcinoma (not derived from gland tissue but gland-like in structure); gelatinous carcinoma (formerly colloid); squamous-cell carcinoma. It may be argued that even these six might be simplified still more, and simpler names will occur to most surgeons. It may be noted that the manner in which the term "cell nests" is used by these authors differs from our usage. Cell nests to them are simply the collections or masses of cancer cells within the surrounding stroma. To us the cell nest is a distinctive formation seen in the terminal portion of the epithelial projections of epithelioma. Sampson Handley's permeation theory of the spread of cancer is accepted without reservation, and very complete descriptions of his operation for removal of the breast and lymphangioplasty, as well as the details of the theory are given. The only operative procedure in which the authors believe is properly one which will involve complete removal of both pectoral muscles and a complete dissection of the axilla *en masse* with the breast. Several of the methods of carrying out this procedure are described and lavishly illustrated. The chapter on the treatment of inoperable cancer is as inconclusive as the subject itself. The special author is Dr. Pfahler, and he seems to have had a considerable amount of experience in the treatment of such cases by *x* rays. He advises that every case operated on or inoperable should have a course of treatment by *x* rays. The details of the treatment and its success and failure are very fully placed before the reader.

The book is certain to meet with the highest approbation from surgeons for its large statistical collections and its pathological records, as well as for the even-minded discussions its chapters present of the problems of breast diseases. It is unnecessary to say that it is a handsome volume with few blemishes, and these of minor importance. Misspellings are observed on pp. 235, 282, 485, a singular substantive with a plural verb on p. 273, and the Americanese verbs "to disadvise," "to metastasize," jar on the British reader. But the meaning of the authors is never obscure.

[1] *The Breast: Its Anomalies, its Diseases, and their Treatment.* By John B. Deaver, M.D., LL.D., Sc.D., Professor of the Practice of Surgery, University of Pennsylvania, etc., and Joseph McFarland, M.D., Sc.D., Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania, etc., assisted by J. Leon Herman, B.S., M.D., Assistant Surgeon to the Methodist Hospital of Philadelphia, etc. London: Wm. Heinemann (Medical Books), Ltd. 1918. (Sup. roy. 8vo, pp. 724: 277 figures, 8 coloured plates. £2 net.)

ENTOZOA IN MAN.

MEDICAL science sometimes shows a tendency to proceed from the pathological to the normal. Medical students are taught to recognize a number of malevolent bacteria, but the neutrals, the saprophytes, the inhabitants of the mouth or skin which rarely or never produce lesions, are omitted from the crowded curriculum. Reports of investigations on this or that pathogenic protozoön are many, but few indeed are the papers or books written on these animals unless they produce hurt to man. We do not even know what is the normal fauna in the human intestine in most parts of the world.

We therefore welcome Dr. ANNIE PORTER'S *Survey of Entozoa observed among Natives in Johannesburg*,[2] and trust that workers the world over will devote some time to informing us what the normal fauna is. It is obvious that such an inquiry would throw a flood of light on epidemiology; at present "the natives" are rather vaguely regarded as a source of danger to the cantonment or barrack. In the few places in which such investigations have been made it has frequently been a source of surprise to find some particularly "deadly" organism occurring in a large percentage of the population and apparently causing no harm. A man (or a monkey) may carry *Entamoeba histolytica* for a very

[2] *A Survey of the Intestinal Entozoa, both Protozoal and Helminthic, observed among Natives in Johannesburg from June to November, 1917.* By Annie Porter, D.Sc. Johannesburg: S. African Institute for Medical Research. 1918. (Sup. roy. 8vo, pp. 58; 2 plates, 25 tables. 5s.)

long period and not be one jot the worse. Dr. Porter very definitely ranges herself with those who regard *Giardia (Lamblia)*, *Trichomonas*, and *Chilomastix* as causers of diarrhoea. Until some worker can produce a series of cases of "flagellate diarrhoea," the stools of which were proved by repeated platings not to contain pathogenic bacteria, we shall maintain an attitude of doubt. If we may be pardoned for saying so, the protozoologist's attitude is not a sound one: we grant that various flagellates are often numerous in persons suffering from diarrhoea; we are very much interested to hear that these infections were found to be associated *post mortem* with points of inflammatory oedema, sometimes with definite ulceration; we can, however, never forget seeing a stool consisting almost entirely of *Giardia* and mucus, which was regarded as an undoubted case of flagellate diarrhoea, until a methodical bacteriologist isolated from it the *Vibrio cholerae*.

Dr. Porter gives statistical evidence of the infection of various native tribes with the prevalent protozoa and worms; 56 per cent. of the men examined were passing entozoa in their stools; multiple infections were not common, and were usually due to infection with *Entamoeba coli* or *Spirochaeta eurygyrata*, in company with some other organism. The discovery that cockroaches feed on human excrement, and pass the cysts it may contain unharmed through their own alimentary canal, is of very great importance. Cockroaches are world-wide in their distribution and closely associated with man, and in warm climates, where intestinal disease is so rife, they have, owing to the habits of the people, much easier access to human faeces than in this country.

STARLING'S "PHYSIOLOGY."

AT every stage in his career the student of medicine is admirably provided nowadays with numerous textbooks from which he can choose whichever best suits his style of mind or special aptitudes in reading. This is, perhaps, most of all the case when he comes to study physiology, a science provided with a greater number of varied but first-class textbooks than any other at the present time. In the third edition of Professor STARLING'S *Principles of Human Physiology*[3] the student and medical practitioner will find a full and up-to-date account of the whole subject, clearly written, excellently illustrated, and summarized for his benefit by a practical physiologist of great knowledge and well-known originality.

The first part of the volume deals with general physiology, or the structural, material, and energetic bases of the body. In the second part the mechanisms of movement and sensation are described; a new feature in this edition is the introduction of chapters on vision by Dr. Hartridge, extending to over a hundred pages, in which the whole subject is very lucidly put before the reader. The third part describes the mechanisms of nutrition, including metabolism and the physiology of digestion, the part played by the circulating blood and lymph, respiration, renal excretion, and other such subjects. The last part of the book is devoted to the subject of reproduction.

Everywhere Professor Starling writes as a man of science interested primarily in the mechanics and chemistry of physiology, the concrete rather than the abstract, the practical reactions of the living body rather than the metaphysical conceptions or interpretations to which they may give rise. The book is admirably arranged, the text sufficiently dogmatic to form thoroughly instructive reading that is at the same time thoroughly interesting. The issue of three editions of the volume within nine years shows that it has attained the success it so fully deserves.

A PRACTITIONER'S CYCLOPAEDIA OF MEDICINE.

THE fifth edition of the large textbook of *Internal Medicine*[4] by Professor WILSON of the Jefferson Medical College, Philadelphia, and a number of collaborators, including Dr. C. H. Turner, is issued in four volumes. The first two of these have as sub-title the term "Medical Diagnosis"; the third volume is the fourth edition of Ortner's book on treatment, translated by Dr. Bartlett, and edited by Professor N. B. POTTER; and the fourth volume is described as a "complete desk index." The whole is intended for the use of the medical practitioner. Volume I deals with clinical methods or medical diagnosis in general, giving the various methods that may be used in examining the patient and their immediate results, the symptoms and signs of disease exhibited by the different systems of the body, and the modes of applying a number of tests. Volume II, erroneously described on its title page in the copy now before us, deals with the clinical applications of the results revealed by the methods and tests detailed in the first volume, and is described as a "Natural History of Disease." It is, in fact, a textbook of descriptive medicine in eighteen chapters, clearly written, and paying great attention to the differential diagnosis of the various morbid conditions described.

The third volume is given to the treatment of disease, and reflects current practice in Germany, enlarged by the addition of many notes by the editor; the prescriptions have been rewritten in conformity with the American *Pharmacopoeia*, both the English and the metric scales of measurement being given. The fourth volume is a general index to the other three, and appears to be perhaps less complete than the rest of the work: thus it contains no mention of *Filaria loa*, for example, or of "saltatory spasm," "palmus," "jumpers," "latah," "myriachit," and "Bamberger's static reflex spasm"—disorders all described in the second volume.

In general, the volumes of *Internal Medicine* may be described as well written and comprehensive, up to date, adequately illustrated, and therefore to be recommended to medical men in search of textbooks of clinical diagnosis and the principles of treatment. The general practitioner who acquires these volumes should consult the first of them as often as the second, and the second as often as the third.

A HANDBOOK OF SKIN DISEASES.

DR. FREDERICK GARDINER has succeeded well in describing the more common skin affections, in his small *Handbook of Skin Diseases*.[5] In present times, when the medical curriculum demands every spare moment from the hard-worked medical student, such a handbook will prove useful to those who have no opportunity for fuller reading. From a dermatologist so well known correctness of description and treatment are to be expected, and this is found in the book.

The reader will seek in vain for a chapter on eczema. Since the author says that new dermatitis is but old eczema "writ large," it is to be assumed that he includes the condition under this heading. But such a terminology seems to us to have many disadvantages and few merits, for the substitution of another name does not prevent the abuse of it. As understood by dermatologists, "eczema" has a definite meaning, and the proper employment of this term is both useful and accurate. For this reason alone its omission seems regrettable.

Apart from this criticism the book will be found to give in clear language a good short account of the diagnosis and management of the diseases of which it treats, and will prove a useful aid to those consulting it.

NOTES ON BOOKS.

AS an interesting study in modern sociology Miss ARABELLA KENEALY'S book on *Feminism and Sex-Extinction*[6] sets out to show the harmful side of feminism in the past, the present, and the future. It begins with a study of the part played by women in human evolution, and it is argued that human decadence and the fall of ancient civilizations have largely been due to feminist movements and doctrines; the last chapter of the book, entitled "The impending subjection of Man," foretells the coming downfall of the human race should feminist aims be realized. Miss Kenealy writes with conviction, and her pages should confirm, if not console, those who see nought but harm in votes for women.

[3] *Principles of Human Physiology.* By Ernest H. Starling, C.M.G., F.R.S., M.D., Hon.Sc.D.(Cambridge and Dublin), F.R.C.P. Third edition. London: J. and A. Churchill. 1920. (Roy. 8vo, pp. xiv+1315; 579 figures, 10 in colour. 25s. net.)

[4] *Internal Medicine: A Work for the Practising Physician on Diagnosis and Treatment.* With a complete Desk Index. By Nathaniel B. Potter, M.D., and James C. Wilson, M.D. Fifth edition, in four volumes. With 441 illustrations. Philadelphia and London: J. B. Lippincott Co. 1919. £3 15s. net.

[5] *Handbook of Skin Diseases.* By Frederick Gardiner, M.D., B.Sc., F.R.C.S.E. Edinburgh: E. and S. Livingstone. 1919. (Cr. 8vo, pp. xix+160; 46 figures. 6s. net.)

[6] *Feminism and Sex-Extinction.* By Arabella Kenealy, L.R.C.P. Dubl. London: T. Fisher Unwin, Ltd. 1920. (Demy 8vo. pp. x+313. 2s. 6d. net.)

THE FINANCE BILL.

THE activities of the tax collector entail such serious consequences in the present day that we feel impelled to turn again to the subject of national finance, to deal with the further information that has been made available by the recent publication of the Finance Bill, 1920—the Chancellor's proposals in statute form.

On the important question of motor-car taxation very little further light is thrown, as the Government White Paper, issued when the Budget was introduced, apparently contained an almost verbatim copy of the detailed proposals; the bill, however, contains a specific exemption in favour of "ambulances," a privilege which they share with road-rollers and the fire brigades of local authorities. Since Mr. Chamberlain's speech, however, the deputation from the British Medical Association to the Ministry of Transport and the Budget debate of April 27th have materially elucidated the questions in issue. The argument put forward in Parliament by Sir Eric Geddes was, in brief, that a system of taxation by "licence," instead of by fuel consumption, favoured the constant user at the expense of the occasional user, and in consequence automatically conferred a preference on the owner of a car kept for professional and therefore frequent use. To that argument the medical profession has two answers—first, that a frequent use often implies a virtual necessity to maintain a second or reserve car, which under the proposals would increase the licence duty by 30 per cent. for the quarter in which resort was had to the reserve car; and secondly, that even if the medical man has any such automatic preferential treatment, so has the owner of a commercial car, and equity demands that any advantage which the commercial car has by assessment of the licence duty on the basis of weight should be extended to cover both, seeing that the purposes served are essentially similar. The report of the recent Royal Commission on Income Tax unanimously recommended that the two classes of car should, for the first time, receive identical treatment as regards the income tax depreciation allowance, and the recommendation will presumably receive statutory effect before long; it seems strange to find one Government department deliberately setting up a distinction which another department has just been advised to abolish. We are clear that the same rules for licence duty should apply both to commercial and to professional cars; others may consistently take another view, but the point as to which there can surely be no difference of opinion is that at least a "reserve" car should be officially recognized and exempted from licence duty so long as it is not used simultaneously with the ordinary car. Any other course of action would put a very heavy penalty on any practitioner who keeps a reserve car. Seeing that when a sudden breakdown occurs the patient is the chief sufferer, the public as well as the profession are directly concerned in this question, and may even yet make their voice effectively heard.

On the proposals for reconstructing the income tax system so far as the graduating of the effective rate and the relief to earned incomes are concerned the bill throws some further light. To the taxpayer whose income is entirely unearned—or, in the newer phraseology of the statute, is "investment income"—the increase in the allowances is not quite so marked as might appear at first sight; for instance, in such a case the wife allowance is extended from £50 to £90 not from £50 to £100, and so on.

The position with regard to a married woman doing professional work has been somewhat improved. Under the old Act an allowance for separate "abatement" was given only where the total joint income of husband and wife did not exceed £500. In present circumstances that limit was sufficiently low to debar the great majority of married women working professionally from the advantage of any such allowance. The position under the new bill is that in any case the married man has a deduction of £90 from his "assessable income," and there is also to be deducted nine-tenths of the earned income of the wife, provided that that deduction does not exceed £45. When it is remembered that £225 of the taxable income is to be charged at 3s. and the remainder at 6s., it will be realized that the value of an allowance has in most cases to be reckoned at 6s. in the £, so that though the allowance seems insufficient, it will at any rate affect the actual tax payable to a maximum extent of £13 10s., which is better than no allowance at all.

The deduction to be made in respect of a child now applies irrespective of what may be the total income of the parents—the old Act limited the allowance to cases in which that total did not exceed £1,000 per annum—but a new proviso makes its appearance, that the child must not be "entitled in his own right to an income exceeding £40 a year." Having regard to the purposes for which the allowance is presumed to be required, it is difficult perhaps to find fault with the proviso, but it may disappoint some who had expected to find themselves entitled to the deduction, and are affected by the limit of £40. It should be added that scholarships and similar educational endowments are not reckoned in computing the £40 income.

The provisions in respect of Colonial income tax and the relief to be given to persons paying a "double" tax, because they reside in one fiscal jurisdiction and draw their income from another, strike us as being complicated and likely to be rather difficult to work; the basis of the allowance is, however, fairly simple. Briefly, the idea is for the British Exchequer to give up either one-half the effective rate of British tax or the rate of the Colonial tax, whichever is the less. Unfortunately, owing to the system of allowances, neither of these rates can be readily computed, and the reparation of claims for repayment under these provisions is likely to be a long and intricate task. In the result, however, the relief should be not ungenerous from the point of view of the other British taxpayers.

The stamp duties invite no further comment; they are unwelcome, but have been generally accepted in a spirit of somewhat mournful resignation. The excitement and feeling of resentment engendered in financial and commercial circles by the unexpected increase in the excess profits duty has probably diverted into another channel the antagonism which the increase in stamp duties would otherwise have attracted.

The opposition to the excess profits duty has to some extent concentrated on what is certainly the most objectionable feature of that universally disliked but very lucrative tax, and that is the unfortunate position of new concerns possessing no "pre-war standard" measured by pre-war profits. It is true that a "standard" is given by allowing a certain percentage on capital to be taken in lieu of a "profits" standard, but it is urged that this does not leave the founders of a new concern sufficient financial inducement to take the necessary risks, particularly in view of the high rate of the income tax levied on the residuum of the profits left after payment of income tax, and thereby is checking the organization of increased production. The Chancellor held out some hope that special consideration would be given to such cases, but the bill is silent on the point. No doubt he is reserving his decision in order that it may be dealt with when the bill is in a later stage. A levy of 60 per cent. is provided for, and as Sir William Pearce's committee does not seem likely to advocate a practicable scheme for a capital levy on war fortunes with any approach to unanimity, its reduction to 40 per cent., which was to be contingent on the adoption of such a scheme, does not appear very probable.

The corporation tax has only an indirect interest for members of the medical profession; it is, perhaps, sufficient to say that the bill provides for an allowance of £500 a year, the tax being imposed at 1s. in the £ on the excess over that sum, and contains provisions intended to prevent the artificial reduction of the profits by payment of high salaries to managers who are virtual proprietors, or in other ways.

The repeal of the land values duties is coupled with the grant of a right of repayment of past duties, such claims to be lodged within six months after the commencement of the Act. The Chancellor of the Exchequer suggested that it would be a graceful act to refrain from making such a claim. Time will show somewhat interestingly to what extent the British taxpayer is open to so altruistic an appeal.

The Finance Bill contains no reference to the new postal rates, but when it comes into force on June 1st the increase

in the letter rate from 1½d. to 2d. will make letter writing a tax on the pocket as well as on the time of doctors, and will seriously increase the expenditure of an Association such as ours.

WEIGHT, HEIGHT, AND LONGEVITY.

A PAPER read by Mr. Lewis P. Orr, manager of the Scottish Life Assurance Company, to the Faculty of Actuaries of Edinburgh last December, has now been published as part of the *Transactions* of the Faculty. We propose to direct attention here chiefly to one point in Mr. Orr's paper—namely, the matter of weight in relation to height and age.

Among the proposers for life assurance, he said, were some who, though they had no adverse points in their family or personal history, and showed no signs of disease, were light in weight and poor in chest development; their chance of living long depended upon their consenting to take a course of physical exercises and recreation in the open air. The best course was to give them this advice and either defer the proposal for a considerable time or impose a substantial extra premium, with a promise of reconsideration in the course of a year or two.

Tuberculosis.

The relation of weight to height appeared to be an important point in the consideration of lives giving a family history of tuberculosis. He suggested that the facts justified general recommendations on the following lines:

Lives up to age 25.—Up to age 25 lives with a tuberculous family history should not be accepted without an extra premium. Particular attention should be paid to weight and to the development of chest. In many cases the physical development will be found to be under average and to be associated with an under-average weight; it is desirable to defer such cases for some years unless the condition is so unsatisfactory as to lead to the harsher verdict of declinature.

Lives aged 25 to 35.—In this section of lives those under 30 should be subject to rigid scrutiny, and, generally speaking, should be regarded as requiring an extra premium dependent upon the incidence of the family history and the physical condition (particularly the weight) of the proposer. Those between 30 and 35 may be looked upon more favourably; where the family record is tainted by consumption to a very limited extent (say, one isolated case) and the personal history, physique, weight, and environment are good, then the life might be regarded as assurable at ordinary rates.

Lives above 35.—Unless the tuberculous family history be well marked (say, two cases) or the weight below the average, it is not necessary to load the premium for these lives, provided they are thoroughly satisfactory in all other ways. From and after the age of 40 a family record of tubercle loses much of its significance.

Personal Condition.—In assessing all such lives particular attention must always be paid to personal history and physical condition (including particularly the development of the chest and the weight in relation to height and age), and also to occupation and environment, for their importance as favourable or unfavourable factors is exceedingly great.

In the discussion which followed the paper both Dr. Byrom Bramwell and Professor Gulland expressed the opinion that Mr. Orr had taken too favourable a view with regard to a history of tuberculosis in persons over 35.

Weight in Relation to Height and Age.

As a contribution to an estimate of the importance of weight in relation to height and age in insurance practice Mr. Orr presented a table (printed at foot of page), based on the experience of male lives accepted as first class under 18,306 assurances; the actual number of lives was less, as cases in which the same life had been insured at intervals were included. The investigation comprised the period 1881–1915 inclusive, and the lives were of a good healthy class, as was shown by the satisfactory rate of mortality. The error introduced by the fact that the persons were weighed in their clothes—the weight of which would vary in summer and winter—was of little consequence from the insurance point of view, as in selection a margin was allowed on either side of the standard weight. The measurements were taken for the most part with the proposer's boots off.

Comparison of these statistics with those of the American medico-actuarial investigation showed close correspondence. The weights for the principal heights were very consistently about two pounds less than the American experience, except at ages over 50; the British weights above that age were two to four pounds more, but owing to the smallness of the British numbers no importance could be attached to this. From what was known

Average Weights in Relation to Height and Age. (*"Scottish Life" Experience—1881–1915.*)

MALE LIVES.

Age.	5 ft. 3 in.	5 ft. 4 in.	5 ft. 5 in.	5 ft. 6 in.	5 ft. 7 in.	5 ft. 8 in.	5 ft. 9 in.	5 ft. 10 in.	5 ft. 11 in.	6 ft.	6 ft. 1 in.	6 ft. 2 in.	Age.
	st. lb.	st. lb.	st. lb.	st. lb.	st. lb.	st. lb.	st lb.	st. lb.	st. lb.	st. lb.	st. lb.	st. lb.	
15	8 5	8 8	8 12	9 1	9 4	9 8	9 12	10 2	10 5	10 9	11 0	11 5	15
16	8 7	8 10	8 13	9 2	9 5	9 9	9 13	10 3	10 7	10 11	11 2	11 7	16
17	8 8	8 11	9 0	9 4	9 7	9 11	10 1	10 5	10 9	10 12	11 4	11 8	17
18	8 9	8 12	9 1	9 5	9 8	9 12	10 2	10 6	10 10	11 0	11 5	11 10	18
19	8 10	8 13	9 2	9 6	9 9	10 0	10 4	10 8	10 12	11 2	11 7	12 12	19
20	8 11	9 0	9 4	9 7	9 11	10 1	10 5	10 9	10 13	11 3	11 8	11 13	20
21	8 12	9 1	9 5	9 9	9 12	10 2	10 6	10 10	11 1	11 5	11 10	12 1	21
22	8 13	9 2	9 6	9 10	9 13	10 4	10 8	10 11	11 2	11 6	11 11	12 2	22
23	9 0	9 3	9 7	9 11	10 0	10 5	10 9	10 13	11 4	11 8	11 13	12 4	23
24	9 1	9 4	9 8	9 12	10 1	10 5	10 10	11 0	11 5	11 9	12 0	12 5	24
25	9 1	9 5	9 8	9 12	10 2	10 6	10 11	11 1	11 6	11 10	12 1	12 7	25
26	9 2	9 5	9 9	9 13	10 3	10 7	10 12	11 2	11 7	11 11	12 3	12 8	26
27	9 3	9 6	9 10	10 0	10 3	10 8	10 13	11 3	11 8	11 13	12 4	12 10	27
28	9 3	9 7	9 11	10 1	10 4	10 9	10 13	11 4	11 9	12 0	12 5	12 11	28
29	9 4	9 7	9 11	10 1	10 5	10 10	11 0	11 5	11 10	12 1	12 6	12 12	29
30	9 4	9 8	9 12	10 2	10 6	10 11	11 1	11 6	11 10	12 2	12 8	13 0	30
31	9 5	9 9	9 12	10 2	10 6	10 11	11 2	11 6	11 11	12 2	12 9	13 1	31
32	9 5	9 9	9 13	10 3	10 7	10 12	11 2	11 7	11 12	12 3	12 10	13 2	32
33	9 6	9 10	10 0	10 4	10 8	10 13	11 3	11 8	11 13	12 4	12 11	13 3	33
34	9 6	9 10	10 0	10 5	10 9	10 13	11 4	11 9	12 0	12 5	12 12	13 4	34
35	9 7	9 11	10 1	10 5	10 10	11 0	11 5	11 10	12 1	12 6	12 13	13 5	35
36	9 8	9 12	10 2	10 6	10 10	11 1	11 5	11 10	12 1	12 7	13 0	13 5	36
37	9 8	9 12	10 2	10 6	10 11	11 1	11 6	11 11	12 2	12 7	13 1	13 6	37
38	9 9	9 13	10 3	10 7	10 12	11 2	11 7	11 12	12 3	12 8	13 2	13 7	38
39	9 9	10 0	10 3	10 7	10 12	11 2	11 7	11 12	12 3	12 9	13 2	13 8	39
40	9 10	10 0	10 4	10 8	10 13	11 3	11 8	11 13	12 4	12 10	13 3	13 9	40
41	9 11	10 1	10 5	10 9	11 0	11 4	11 9	12 0	12 5	12 11	13 3	13 9	41
42	9 11	10 1	10 5	10 9	11 0	11 4	11 9	12 0	12 5	12 11	13 4	13 10	42
43	9 12	10 2	10 6	10 10	11 1	11 5	11 10	12 1	12 6	12 12	13 4	13 11	43
44	9 12	10 2	10 6	10 11	11 1	11 6	11 10	12 1	12 7	12 12	13 5	13 11	44
45	9 13	10 3	10 7	10 11	11 2	11 6	11 11	12 2	12 7	12 13	13 6	13 12	45
46	10 0	10 4	10 8	10 12	11 3	11 7	11 12	12 2	12 8	12 13	13 6	13 12	46
47	10 0	10 4	10 8	10 13	11 3	11 7	11 12	12 3	12 8	13 0	13 7	13 13	47
48	10 1	10 5	10 9	11 0	11 4	11 8	11 13	12 4	12 9	13 1	13 8	14 0	48
49	10 1	10 5	10 9	11 0	11 4	11 8	11 13	12 4	12 9	13 1	13 8	14 0	49
50	10 2	10 6	10 10	11 0	11 5	11 9	12 0	12 5	12 10	13 2	13 9	14 1	50
51	10 2	10 6	10 10	11 1	11 5	11 10	12 0	12 5	12 11	13 2	13 10	14 2	51
52	10 3	10 7	10 11	11 1	11 6	11 10	12 1	12 6	12 11	13 3	13 10	14 2	52
53	10 3	10 7	10 11	11 2	11 6	11 11	12 1	12 6	12 12	13 3	13 11	14 3	53
54	10 4	10 8	10 12	11 2	11 7	11 11	12 2	12 7	12 12	13 4	13 11	14 3	54

The age given is the age next birthday. At ages 55 and upwards the average weight might be regarded as that applicable to age 54.

of German and Austrian insurance statistics, it appeared that the Anglo-Saxon, as represented by Great Britain and the United States and Canada, was lighter than the German and Austrian to the extent of, roughly speaking, one stone.

Opinions differ as to the extent to which over-weight and under-weight might prevail without making it necessary to require an extra premium. Mr. Orr suggested that 16.66 per cent., or one-sixth of the total normal weight, might serve as a general guide, but the facts in each case must be taken into consideration. Thus light weight combined with a family history of consumption or a personal history of chest disease was unfavourable, particularly in the younger lives. In normal persons light weight was favourable in middle age and among elderly lives. It might, indeed, be that among lives otherwise satisfactory it was only at young ages that light weight was adverse; it was adverse because at these ages there was apt to be in persons under weight a greater tendency towards lung trouble than among those of average build. Mr. Orr, after quoting Hippocrates to the effect that "corpulence is not only a disease in itself, but the harbinger of other diseases," went on to say that in life insurance heavy weights showed a heavy mortality and that among heavy weights those with a protuberant abdomen were the least desirable. Regret was expressed during the discussion that Mr. Orr was not able to give a table of weights of women to elucidate the general statement that females were lighter than males to the extent of some five or six pounds at the chief insuring ages and heights. He said, however, that the best type of female life for assurance companies was the spinster earning her own living; the least, the married woman not earning her own living. He thought it probable that in the latter case there was a selection against the companies, the wife's life being insured because it was believed not to be so good as the husband's.

SOME MANUSCRIPT NOTES BY FLORENCE NIGHTINGALE.

MAY 12TH was the centenary of the birth of Florence Nightingale, who was born in Florence on May 12th, 1820. The anniversary is touched with a peculiar glory in view of all that the nursing profession has achieved in the Great War. The Leader of Nurses died only a year or two before this supreme test of her ideals and achievements on a vast scale. But we seem to hear her voice once more, when, as now, there comes to hand in a medical library a scrap of writing from her prophetic pen. It is typical of a whole branch of her many activities, which were yet all concerned with nursing.

Long after she had won fame by her heroic labours in the Crimean campaign Florence Nightingale acquired quite another reputation—by which alone she would deserve to be remembered—as a commentator of official reports on the health and sick-nursing of soldiers. In 1863 was issued the Report of the Commission on the Sanitary Condition of the Army in India. It is contained in two folio volumes amounting to nearly 1000 pages, and in Volume II are the reports from every station in India occupied by British or native troops. This immense mass of evidence had been sent in manuscript to Miss Nightingale for her criticism and report. Her observations at p. 347 of Volume I bring together the facts "in an order and with an incisive force of statement," says one of her early anonymous biographers, "which render it one of the most remarkable public papers ever penned." The report was regarded as likely to inaugurate a new era in India, for her views extended to towns as well as cantonments.

During the American Civil War, and again during the European War of 1870, Miss Nightingale was officially consulted on several occasions as an authority on questions of military hygiene and assistance to the wounded in the field. Later, private persons appealed to her. In the early days of the movement for the fuller employment of women she was eagerly referred to. In the year 1881 an article entitled "Notes on Sick Nursing," by Nurse Enderby, was forwarded to Miss Nightingale by the editor of *Every Girl's Magazine*, with a polite request for comment and suggestion. Miss Nightingale's reply is in pencil. The handwriting is clear and more modern than might have been expected. The date is November 19th, 1881. She apologizes for a long delay in sending her reply

"I am always," she writes, "under the severe pressure of overwork and illness. . . . Some short remarks I will make by way of suggestion:

"The article rightly professes to take the form of notes and to afford only hints to those for whom systematic teaching and practice is not available. But it is to be feared that some portions of the Article would tend to induce a belief in the readers that mere lectures and classes, unconnected with Hospital *ward training*, mere reading, mere good will and intentions would enable them to do many things for which only a trained nurse is competent—

"—such, for instance, as the otherwise useful instructions relating to the authority of the nurse over her patient and those about the patient—

"—to the observation of symptoms and reporting thereon to the Medical Men—

"—to the giving of food and to some extent also to the proper carrying out of ventilation.

"The tendency to over-confidence is usually far greater in those possessing a superficial knowledge than in the well trained. The power both of observation and of safely exercising any discretion in executing the Doctor's orders can only be acquired by training and long practice; and in any serious illness outside a Hospital there must necessarily be always frequent occasions in which the Doctor's instructions cannot be precisely adapted to the varying circumstances of the Patient during his absence.

"Words of warning and caution seem to me, therefore, to be desirable with regard to the application of these portions of the Notes.*

"I need hardly say that it is a matter of rejoicing that the attention and interest of all classes of women should be aroused to the subject by periodicals specially addressed to them, and that it would be a matter of intense thankfulness if more of *first-rate* women could be brought in to fill, after a good Hospital training, the places which are eagerly waiting for them of heads, etc., of Hospital Nursing and of departments of Hospital and Workhouse and District Nursing. People scarcely realize how few the real labourers are to the harvest. I therefore hail beyond anything your interest in the subject.

"P.S. Since I wrote this, I have Miss Enderby's second note. I can only bid you 'God speed' with all my heart and might, and repeat my apology. It is very many years since I have been obliged to decline, however unwillingly, any work of this kind, such as revising ladies' articles, much as it may concern the subject on which I spend my life.

"Excuse a pencil scrawl. F. N."

* "Had I time and strength I could give you instances where the Patient's life has been jeopardized by the Nurse exerting her 'authority' with insufficient knowledge—in each of the applications cited."

The foregoing is a fragment and, though marked by much of her characteristic common sense, belongs to that latter period in the long and illustrious career of Florence Nightingale when she had retired into the seclusion of her sick room in her house in South Street, Mayfair, and had become somewhat of a myth—a voice, as it were, behind a veil. Her seclusion lasted some forty-five years, until her death some ten years ago. "The dying woman," says Mr. Lytton Strachey in his witty *Eminent Victorians*, "reached her 91st year," and he proceeds to paint a somewhat severe picture of the last phase of the once masterful heroine. The few phrases sent to the editor of the magazine, which are quoted above, are certainly in great contrast with the well known *Notes on Nursing* of 1860. The author of that "Classical compendium of the besetting sins of the sisterhood, drawn up with the detailed acrimony, the vindictive relish of a Swift, now"—in Miss Nightingale's last period, that is—"spent long hours in composing sympathetic addresses to probationers, whom she petted and wept over in turn." This is picturesque exaggeration: the *Notes on Nursing*, taking into consideration their epoch, are neither acrimonious nor vindictive. Their satire is in their very truth. They are pungent, as truth alone can be, in their references to "amateur females" and their "physicking" propensities, nurses who "rustle," nurses in crinolines, who expose themselves as much as opera dancers when they have to pick something up, "female ink-bottles" (delightful phrase), and "missionariness." In her last epoch Florence Nightingale had already begun to be mollified by the results of her teaching. Surrounding her had grown up a new generation of nurses, one trained in her passion for fresh air, long since discrinolined, actuated according to her fine ideals. There was, therefore, no further need for her satire. And it is this consideration which will account for her later style as it appears in her annual addresses to the nurses at the Florence Nightingale Institute at St. Thomas's Hospital. These addresses, begun in 1872, the year when she ceased her connexion with the War Office, and continued to the year 1900, are doubtless those of which Mr. Lytton Strachey does not approve.

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Royal College of Surgeons of England.

British Medical Journal.

SATURDAY, MAY 15TH, 1920.

EXPERIMENTAL INDUCTION OF CANCER.

ABOUT seven years ago[1] we called attention to a brilliant study by Fibiger of Copenhagen, in which he claimed to have produced *de novo* in the stomach of rats a squamous-cell carcinoma. This represented then, and probably still represents, the only indisputable instance of the experimental production of cancer. It may be recalled that he was struck with the high incidence of gastric cancer in a certain breed of rats, and after most painstaking investigations discovered that these rats all came from a certain sugar factory infested with cockroaches. The latter were carriers of a nematode of unknown species now recognized to be new, and named *Spiroptera neoplastica*. Fibiger stated that the female nematode was 4 to 5 cm. long by about 0.2 mm. in diameter. The male is less than half the size. The eggs are oval and clear; they measure about 0.06 mm. or less in diameter, and contain curled-up embryos. They were seen both in the body of the female nematode and lying free between the upper layers of the epithelium. The nematode, which was found only in that part of the stomach lined by squamous epithelium, lay, as an almost invariable rule, between the stratum corneum and the stratum granulosum. By feeding rats on the infected cockroaches, or by causing them to ingest the ova of the nematode, Fibiger was able to produce in a fair proportion chronic inflammation, papillomatosis, or even carcinoma of the stomach.

Since that time little more has been heard of his experiments, but recently[2] he has published some further interesting researches on the subject. He has found that the transmission of the nematode *Spiroptera neoplastica* (*Gongylonema neoplasticum*) to rats produced carcinoma in the cul-de-sac of the stomach with such frequency that it provides a method applicable to the systematic study of the origin of cancer. He undertook a series of experiments on several species of rodents, especially a strain of rats which had been preserved for a long time in the Copenhagen University Institute of Pathological Anatomy. Here the transmission of the nematodes was accomplished either, as in his former experiments, by feeding the rats on cockroaches (*Periplaneta americana* or *P. orientalis*) infected with the spiroptera, or by the ingestion of the nematode larvae obtained from the muscles of the cockroach, or by injecting the larvae directly into the stomach. The gastric lesions thereby produced were studied in 116 rats which had survived for periods of 30 to 298 days and the stomach of each was examined by serial sections. None of the rats dying from 30 to 44 days after the transmission of the spiroptera presented any indications of malignant growth, but of 102 rats which survived for 45 to 298 days no fewer than 54 showed quite typical carcinoma of the squamous-cell type in the gastric cul-de-sac. In the remaining 48 rats no carcinomata were found but only benign epithelial proliferations and signs of inflammation which are almost invariably provoked by the spiroptera; the absence of carcinoma was verified by serial sections. Of the rats that died with gastric carcinoma in from one and a half to three months after ingestion of the infected material 20 had tumours of more or less microscopical dimensions, and 5 had multiple carcinomata; of 26 which lived for three to ten months 18 had tumours of fairly large size and 8 had minute nodules, whilst 15 had multiple cancers. Finally 8 rats which lived for the prolonged period had tumours of considerable size. The fact that the great majority of carcinomata were more voluminous in the rats which survived for a relatively long time than in those whose period of survival was short would indicate that the majority of the tumours were produced in from one and a half to three months after the transmission of the nematode. The metastases of this experimental cancer have a marked tendency to localization in the lungs. Generally these metastases were so small that serial sections were necessary to demonstrate their presence. In 33 rats the lungs of which were thus examined, pulmonary metastases were observed in 6 cases. In the absence of the actual sections the evidence for pulmonary metastases may not be convincing, for any observer who has studied the histology of the lungs of rats or mice must have been struck with the frequency with which he encountered microscopic nodules of epithelial tissue difficult to interpret. But Fibiger, who is reputed to be an authority on the pathological anatomy of rats, may be credited with the ability to interpret the findings aright. At any rate, he has been able to demonstrate in one case metastases from the gastric epithelioma in a retroperitoneal lymph gland.

Up to the present he has produced carcinoma of the stomach in 89 rats and carcinoma of the tongue in 5, the particulars of which are to be given in another article. Whilst admitting that other strains of rats may be less susceptible to nematode cancer than those brought up in his institute, he states that the other strains of tame rats with which he has experimented are equally prone. But other species of rats —grey rats or black rats—would seem to be much less often affected. It would seem to be established that nematode cancer of rats can be produced readily in more than half of the experiments after a period of six weeks, and it provides a means for studying the mode of origin and conditions of development of cancer—problems which, so far, have been impossible of systematic experimental investigation.

[1] BRITISH MEDICAL JOURNAL, 1913, vol. i, p. 400.
[2] *Comptes rendus de la Société de Biologie*, vol. lxxxiii, No. 10.

VENEREAL DISEASE IN THE PORTSMOUTH AREA.

THE incidence of venereal disease in the Portsmouth area has acquired some importance in the unfortunate controversy which exists between those who do and those who do not advocate that soldiers and other males should be taught that self-disinfection immediately after sexual intercourse lessens very greatly the risk of acquiring venereal disease. On December 10th, 1919, in the House of Lords, Lord Willoughby de Broke, who is president of the Society for the Prevention of Venereal Disease, raised a debate on venereal disease. Lord Sandhurst, replying to a question regarding the prevalence of such disease in the "Portsmouth area," said that in 1914 the incidence of such cases was one and a half times as great, from 1916–18 about twice as great, and in 1919 two and a half times as great in this area as among the military population throughout the United Kingdom.

Sir Archdall Reid, in letters to *The Times* of December 16th and December 19th, said that Lord Willoughby de Broke, in framing his question in the House of Lords, "desired to ascertain in what proportion troops dwelling in a certain definite area under the medical care of a certain medical authority acquired venereal disease as compared to troops in other areas." Sir Archdall Reid expressed his belief that the true incidence in this area was under 25 per 1,000 per annum, and suggested that the figures given by Lord Sandhurst included not only cases of diseases contracted in the area, but also cases appearing among men not under the authority—as, for example, among drafts from other military areas and from overseas. He remarked also that if Lord Sandhurst still believed his reply to Lord Willoughby de Broke to be correct, it was easy for him to establish his position by publishing in full the figures on which the reply was based. These figures are set out in detail in the nine closely printed foolscap pages of a statement recently presented to Parliament by the Ministry of Health, with the concurrence of the War Office, on the incidence of venereal disease amongst soldiers in the Portsmouth area and in the rest of the country.[1]

Sir Archdall Reid has stated his belief that Portsmouth is the "model area for the whole country"; it appears from his letters published in this JOURNAL on January 24th (p. 128) and in *The Times* (December 16th) that by the Portsmouth area he meant "a certain definite area under the medical care of a certain medical authority," where the troops were infected at a rate of less than 25 per 1,000 per annum; this area included the greater part of Hampshire and Dorsetshire. From the Ministry of Health's statement it appears that Lord Sandhurst's comparison was based on notes of cases supposed to have come from "the two contiguous military stations of Portsmouth and Gosport, which practically form one compact urban area." This confusion of name is the first factor in the explanation of the difference between Sir Archdall Reid's figure of less than 25 per 1,000 on the one hand and the figure (163 per 1,000 in the Portsmouth area, compared with 64 per 1,000 elsewhere in the United Kingdom) on which Lord Sandhurst's statement to the House of Lords was based.

Two other factors contributing to this discrepancy would appear to be, first, a lack of uniform practice in classification of entrants to military hospitals, so that cases of venereal disease occurring among other troops were counted against the strength of the Portsmouth and Gosport areas; and secondly, the inclusion of certain admissions from colonial and R.A.F. troops. Lord Sandhurst's statement rested on a comparison of rates of 163 and 64 per 1,000 respectively in the Portsmouth area and the United Kingdom during 1919. In the White Paper these figures are admitted to be erroneous; the rate for the whole of the Portsmouth area should be 47.3 per cent., and for the garrison area 54.4 (not 163). In fairness it should be stated that the incidence rate of 64 per 1,000 for the United Kingdom, if calculated like the other rates on amended lines, would show some diminution.

It is difficult profitably to compare the incidence of infection among sections which differ from time to time in number and composition, and in which the duration of stay of the various elements varies widely at different periods. To obtain a basis for estimating the value of self-disinfection after intercourse it would be necessary to know (1) how many men were exposed to infection and afterwards made efforts at disinfection; (2) how many were exposed and subsequently made no such efforts; (3) how many of the first group became infected; (4) how many of the second group became infected. It is admitted that no information as to these ratios can be derived from the statistics given in sections B and C of the statement regarding the proportions of hospital patients who had practised immediate or late disinfection or none at all. These sections indicate that of 3,000 admissions to military hospitals in the Southern Command, 1,100 in round numbers had used antiseptics, 550 on the same day; a detailed investigation at two other hospitals showed that out of 385 patients questioned by the medical officers in charge of wards 7.3 per cent. said they had swabbed with permanganate solution within ten minutes after exposure; 3.6 said they had used calomel ointment within ten minutes; and 1.5 said they had used both preparations within that time. While these figures have little value for purposes of comparison, and have been challenged by the Society for the Prevention of Venereal Disease, they justify Lord Sandhurst's statement that, even among soldiers who had received instruction, immediate self-disinfection by no means invariably conferred immunity from infection. The statistics do not seem to justify any more general conclusion.

[1] Cmd. 505. H.M. Stationery Office. 2d. net.

SECTIONS AT THE CAMBRIDGE MEETING.

At the Annual Meeting of the British Medical Association at Cambridge, which begins at the close of next month, the Section of Medicine will meet on Wednesday, Thursday, and Friday, June 30th, July 1st and 2nd, under the presidency of Sir Humphry Rolleston. The morning session on June 30th, with the president in the chair, will be devoted to a discussion on the diagnosis of nervous disorders of the stomach and intestines, to be opened by Dr. A. F. Hurst. The other speakers will include Sir Clifford Allbutt, President of the Association, Dr. Charles Bolton, Dr. Langdon Brown, Dr. Maurice Craig, Dr. R. G. Gordon (Bath), Mr. H. Tyrrell Gray, Dr. Robert Hutchison, Dr. Craven Moore (Manchester), Dr. R. J. Buchanan (Liverpool), Dr. E. Hobhouse (Brighton), and Dr. W. J. Tyson (Folkestone). In the afternoon Mr. J. Barcroft, F.R.S., will demonstrate methods of analysing the gases of the blood and alveolar air. On the morning of July 1st, with Professor J. B. Bradbury in the chair, Professor F. G. Hopkins will open a discussion on the present position of vitamines in clinical medicine, which will be continued by Sir James Barr, Dr. S. M. Copeman, Dr. Corry-Mann, Dr. A. Croft Hill, Professor C. J. Martin, Dr. Eric Pritchard, and Dr. Leonard Williams. On the morning of July 2nd, with Dr. Thomas Lewis in the chair, a discussion on the clinical significance and course of subacute bacterial endocarditis will be opened by Sir Thomas Horder, who will be followed by Dr. Carey Coombs (Bristol), Dr. J. M. Cowan (Glasgow), Dr. H. S. French, Dr. A. G. Gibson (Oxford), Dr. A. E. Gow, Dr. A. J. Hall (Sheffield), Dr. J. Hay (Liverpool), Dr. F. J. Poynton, Dr. H. J. Starling (Norwich), and Dr. W. E. Hume (Newcastle). An exhibition of specimens illustrating the subject of this discussion will be held in the Pathological Museum. The Tropical Diseases Section will meet under the presidency of Professor G. H. F. Nuttall, on Wednesday, June 30th. During the morning session papers will be read on problems of filariasis, by Drs. Stephens and Yorke; on the part played by *F. bancrofti* in the production of lymphatic obstruction, and a consideration of elephantiasis from the pathological standpoint, by Dr. G. C. Low and Dr. Manson-Bahr; and on the effects of vitaminic deprivation on the endocrine organs, with special reference to wet beri-beri and epidemic dropsy, by Lieut.-Colonel R. McCarrison, I.M.S. During the afternoon Dr. R. T. Leiper will demonstrate parasitic worms; a collection of all known

species of tsetse flies will be exhibited by Professor Newstead, who will give a demonstration dealing with their morphology and bionomics. Lieut.-Colonel S. P. James will demonstrate the use of the mobile laboratory for malarial inquiries in England; and paintings illustrating the treatment of leprosy will be shown by Sir Leonard Rogers. The Section of Medical Sociology will meet on Friday, July 2nd, at 10 a.m., under the presidency of Dr. G. E. Haslip. Sir George Newman, K.C.B., M.D., will open a discussion on the Future of Medical Practice, dealing with the subject from the point of view of the State. The discussion will be continued by Sir Wilmot Herringham, K.C.M.G., M.D., from the standpoint of the Consultant; by Dr. Alfred Linnell, from that of the General Practitioner; by Professor F. Gowland Hopkins, F.R.S., from that of Medical Research; and by Mr. E. W. Morris, C.B.E., House Governor of the London Hospital, from that of the Hospitals.

NATIONAL COLLECTION OF TYPE CULTURES.

THE Medical Research Council has made arrangements with the Lister Institute to maintain a national collection of type cultures at the Institute, where all the necessary facilities have been provided. The object of the collection is to enable biologists in general and bacteriologists in particular to obtain from a trustworthy source authentic strains of recognized bacteria and protozoa for scientific work. The need of an available supply of this kind has long been felt in many directions and particularly in medical research work, for the study of principles and methods in bacteriological technique, and for the systematic classification of bacteria and protozoa in their various species and strains. In this country the Lister Institute of Preventive Medicine has for many years assisted bacteriologists both at home and abroad, so far as the resources of its own private collection have permitted, but British workers have been dependent in great part upon the courtesy of scientific colleagues or upon the collections of institutes in other countries. Before the war the collection at the Pasteur Institute in Paris, maintained by M. Binot, was very helpful to workers here. A collection of type cultures was formerly maintained on a commercial basis by Král at Prague, and this was subsequently transferred to the sero-physiological institute of Vienna. This source of supply was never completely satisfactory. In America the Museum of Natural History in New York has maintained a Culture Bureau during the last eight years, and it is believed that the facilities afforded by the bureau have been of the greatest benefit to workers there, not only by the provision of authentic cultures, but also through the studies in classification made by its staff. The Medical Research Council expresses its great indebtedness to the governing body of the Lister Institute for affording an opportunity of establishing a central collection upon a proper footing without further delay. The present arrangement is made for a short term of years, and the future location of the collection will be considered before the term expires. The scheme will be under the direction, on behalf of the Council, of Dr. J. C. G. Ledingham, bacteriologist in chief to the Lister Institute, whose part-time services have been lent for the purpose. Dr. R. St. John Brooks has been appointed by the Council to the full-time post of curator, and Miss M. Rhodes to that of assistant curator. It is proposed to collect and maintain bacterial and protozoal strains of medical, veterinary, and economic importance, but in the immediate future the efforts of the staff will be directed more particularly to obtaining fully authenticated strains of pathogenic organisms. Subsidiary researches on the viability of bacteria in artificial media will be undertaken with a view to the discovery of economical and labour-saving methods of subculture. The staff will also be prepared to give help in the identification and classification of strains received from workers at home or abroad. The co-operation of bacteriologists is earnestly invited; cultures that may be sent, either for identification or for maintenance in the collection, should be accompanied by the fullest particulars as to source and date of isolation and by clinical and epidemiological notes. The Director will determine what kinds of cultures are of sufficient importance to be maintained in the collection, but workers are asked to forward strains of even the commonest types as they will be of value at least for the representation of strains of recent origin, and studies in classification will be aided if large series of authentic specimens of different but closely similar or cognate species are available. Cultures will as far as possible be supplied on demand for a small charge to workers at home or abroad. Strains of the commoner types of human infection can already be supplied, and it is intended to prepare a catalogue for publication.

STERILIZATION OF MILK BY ELECTRICITY.

THE Medical Research Council has published a full account[1] by Professor J. Martin Beattie and Mr. F. C. Lewis of Liverpool of their experiments on the use of electricity in the sterilization of milk. The work was begun in 1914 and was assisted by the Medical Research Committee, as it was then styled. The method employed is the passage of alternating electric currents through milk which is flowing with uniform velocity through a horizontal tube. In practice it is found desirable that the temperature at the outlet should be 62° to 64° C. A higher temperature gives a slightly greater degree of sterilization, but is not advised, on the grounds that the milk undergoes chemical changes, that the process carried out under these conditions does not furnish any advantages over ordinary heat sterilization, and that wastage of electrical energy is considerable. If electrical treatment is followed by natural cooling there ensues a "favourable temperature period," during which "residual" bacteria may multiply; more rapid cooling is therefore requisite, and in large-scale practice a refrigerating plant is a necessary adjunct to the electrical apparatus. The taste of the milk is not altered, and souring is delayed to the fourth day at least. Milk prepared in this way was used at the Liverpool Corporation infant welfare centres. It was found that the average reduction of bacteria, as indicated by agar culture, was over 99.9 per cent.; *B. coli* was always absent from the treated milk, although control specimens furnished innumerable colonies growing on neutral red agar at 37° C. The effect of the process on *B. tuberculosis* was carefully tested; milk artificially infected with pure cultures of *B. tuberculosis* and also with sputum containing large quantities of this organism was rendered free, as tested by the inoculation of guinea-pigs with the centrifuged deposit of 100 c.cm. of milk. The Medical Research Committee was able to secure an independent trial of the method in Birmingham, where Professor Leith repeated and extended the Liverpool observations, and Sir Oliver Lodge superintended the study of current action. The work was much interrupted owing to the war, but the results confirm Professor Beattie's claim that the electrical is an effective method for the sterilization of infected milk. Professor Leith concludes that "both the thermal and electrical methods have a high practical value, and deserve consideration in any endeavour made to improve milk supplies. The thermal is simpler and cheaper, the electrical quicker in action." The Liverpool and Birmingham workers differ in the view they take of the manner in which these changes are brought about. The Birmingham workers found a close parallelism between the effects of heat and the electrical current respectively upon the organisms in the milk, and they concluded that the electrical method owes its results not to the direct action of the current as such on the bacilli, but to the heat generated in its passage; Professor

[1] Medical Research Committee. On the Destruction of Bacteria in Milk. London: H.M. Stationery Office. 1920. No. 49. Price 9d.

Beattie and Mr. Lewis, on the other hand, believe that the alternating current produces its destructive action on bacteria by other than thermal means. The Medical Research Council expresses the hope that this question may presently be settled by special inquiry; in the meantime it has no doubt "that the work of Beattie and Lewis has given us an elegant and practical method of purifying milk for human consumption, of which the use upon a large scale becomes now a problem for closer financial and administrative examination."

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.

THE present instalment of the *Oxford* or *New English Dictionary*[1] passes from *visor* to *vywer* (an obsolete form of *viewer*), and contains some interesting medical terms. There is *volsella*, "the chyrurgions little tongs," so often referred to in textbooks of gynaecology, and so often wrongly written *volsellum*, as if volsella were a neuter plural instead of the singular feminine, which it really is; now that the *Dictionary* has given volsella its aegis, it may be hoped that the other form will disappear; *acanthabolus* is another name for it. *Vomica*, which is simply the Latin word for a boil or ulcer, has its strictly medical significance of an ulcerous cavity or abscess in the substance of the lungs, and also that of a place at which water issues. Every medical student knows that the *vomer* is so called from its ploughshare shape, but all are not aware that the *vomic nut* or the *poison nut* is the obsolete name of nux vomica. *Vomiturient*, which has the meaning of "characterized by a desire to vomit," is now obsolete—why, it is hard to tell, for it has an expressive enough sound and would seem, so to say, to meet a felt want. *Vomitory*, also, in its medical sense of emetic, is likewise marked as obsolete in the *Dictionary*, although a quotation is given from a work of 1743, and it is probably to be found in books much more recent than that. *Vomito* is given as a non-naturalized word; it means the yellow fever, and the reference is, of course, to the black vomit which accompanies it in its virulent form. *Vitellus*, and the words grouped with it (for example, *vitellary*, *vitelline*, *vitello-intestinal*, *vitelligenous*, etc.), mostly embryological names, are all fully illustrated; and *vitreous* (glassy), in its medical references, such as vitreous humour, is defined, but as applied to thick and tenacious mucus it has become obsolete. The many medical or, rather, chemical meanings of *vitriol* are set forth in order; but who knows now that *vitriol of Mars* is made by digesting filings of steel in spirit of vitriol? Also, who knows that *vitta* is "that part of the Coat called Amnion, which sticks to the Infant's Head when 'tis just Born"? Under *vivisect* and its associated words the anti's are well represented in the illustrative quotations. Dr. Craigie (the Editor of the present portion) has unearthed a realistic definition of *volvulus* from a book of 1679—namely: "When the Entrals are stopt that they cannot void, it is the Volvuli or wringing of the Guts." An interesting group of words is found in *vulnerary* (useful in healing wounds) and its associates (*vulneral*, *vulnerate*, *vulneration*). Archagathus, as described by Pliny (in Holland's translation), "was called (by report) The vulnerarie Physician or Chirurgion." So much Dr. Craigie's illustrative quotation tells us; but a reference to Holland's delightful book supplies us with the "end-result," so to say, of Archagathus: "Wonderfull much seeking and running there was after him, and none more wealthie than he at his first comming; but soone after when hee was knowne once to carry a cruell hand over his poore patients, in cutting, lancing, dismembring, and cauterizing their bodies, they quickly began to alter his name, and to terme him the bloudy Butcher or Slaughterman, whereupon not only all Physitians, but Physick also grew into a bad name and became odious." So much for "the first Physician that ever came to Rome" and his fair beginning but bad ending. It is a great virtue in a dictionary when its quotations send the reader out of curiosity to the original sources, and in this, as in so many other things, the *New English Dictionary* is "excelling."

[1] *A New English Dictionary on Historical Principles.* Vol. x, *Visor—Vywer.* By W. A. Craigie, M.A., LL.D. Oxford: At the Clarendon Press. London, Edinburgh, New York etc.: Oxford University Press, Humphrey Milford. March, 1920. Price 2s. 6d. net.

PHYSICAL THERAPY IN THE NAVY.

IN continuation of the series of reports dealing with the naval medical history of the war, Surgeon Commander A. K. Smith-Shand, R.N., has contributed to the current number of the *Journal of the Royal Naval Medical Service* a comprehensive account of the work done in radiology and physico-therapeutics. It increased progressively throughout the war and was done chiefly at the large naval hospitals at Chatham, Haslar, and Plymouth, but the R.N. Sick Quarters at Shotley dealt with casualties following certain of the bombardments and raids on the east coast, and the R.N. Hospital at Malta bore the brunt of the work arising from the Gallipoli campaign. A new building for massage and electro-therapeutics was erected at Chatham in 1916, and similar work was carried on in 1918 and 1919 at the R.N. Auxiliary Hospital at Peebles. *X*-ray work was chiefly performed at the three large hospitals. Foreign bodies were usually localized by Mackenzie Davidson's cross-thread method or by Bradbury's method; for eye work Sweet's localizer was usually employed. The number of opaque meal examinations increased fourfold during the war; recently a preparation supplied by Messrs. Allen and Hanbury, containing 75 per cent. barium sulphate in a pabulum of cocoa, arrowroot, and desiccated milk, was the material preferred. In treating ringworm Adamson's 5-exposure modification of the Kienbock method was employed, and one pastille dose was usually sufficient to cure mild uncomplicated cases of sycosis. Good results were obtained in chronic eczema and psoriasis; scars, keloid and lupus also responded well to repeated exposures. Cures were obtained in six cases of rodent ulcer. Surgeon Lieut. Commander Bradbury, at Plymouth, had good results in cases of tuberculous arthritis, and expresses the opinion that "tuberculosis of the wrist, ankles, etc., and of glands should not be operated on until *x*-ray treatment has been given a fair trial." Promising effects were obtained in cases of hyperthyroidism by the administration thrice weekly of one-third pastille doses through a 1 mm. aluminum filter. Ultra-violet radiation was introduced into naval hospitals in 1916, a Simpson lamp being used at Chatham and a Forbes lamp at Haslar; an English-made mercury vapour lamp was employed at Plymouth. The healing of granulating wounds, ulcers, and bedsores was thus accelerated; for after-treatment, a dressing of isotonic saline solution or simple shielding was preferred. Good results were also obtained in cases of acne, sycosis, keloid, and lupus, and after the battle of Jutland treatment by ultra-violet rays, directed through a speculum, was thought to produce remarkably rapid healing of rupture of the ear-drum. In the three large hospitals the work of the physico-therapeutic departments increased fourfold during the war, and was greatly helped by a generous gift made by Johannesburg and Rand school children. Ionic medication was extensively used in the treatment of gonorrhoeal and gouty arthritis, corneal ulcers, neuritis, and fibrositis. Surgeon Lieut. Commander Bradbury had good results from the use of zinc iodide in otorrhoea, and Surgeon Commander Connell reports the employment at Haslar of ionization with mercuric chloride in many cases of primary syphilitic sores and of chancroid. The departments of mechano-therapy were equipped with Sargent's weight-and-pulley apparatus, bicycle exercisers, foot and knee machines, and many other special therapeutic appliances; radiant heat, hydrotherapy, and diathermy were also used. The staffing of the massage

departments and training in them was greatly helped by the decision, taken in 1916, to employ women during hostilities; in 1917 it was arranged to appoint in each hospital a head sister and an assistant sister for massage, together with seven temporary masseuses and three masseurs; the head sister was chiefly employed in teaching. It is the intention of the Admiralty to form a trained staff of male masseurs, and for this purpose schemes have been prepared for the instruction and examination of twenty-four sick berth ratings each year.

THE HOSPITAL SURVEY.

THE hospital survey undertaken by Sir Napier Burnett, Director of the Joint Council of the British Red Cross Society and the Order of St. John, to which reference was made in a Current Note published on May 1st, has been completed. The object in view was to give an indication of the volume of work done by each hospital during 1919, and of the present financial position. The data used were either supplied direct by the hospital secretary or abstracted from the hospital's annual report. Throughout the fifty-five counties of England and Wales 550 hospitals have been dealt with, constituting approximately 78 per cent. of the voluntary civil hospitals, excluding those dealing solely with tuberculosis and excluding also the voluntary hospitals in London which enjoy the benefit of King Edward's Hospital Fund. A table has been prepared giving details of 507 hospitals, which, taken together, provided 29,821 available beds. They are classified in four groups: Group A, containing 82 large general hospitals of 100 beds or over, provided 15,958 beds; Group B, containing 87 hospitals with 30 to 100 beds, provided 4,724 beds; Group C, containing 240 small or cottage hospitals of under 30 beds, provided 3,355 beds; Group D, consisting of 98 special hospitals, provided 5,784, beds. Statistics were not obtained of the number of cases treated during the year in all these hospitals; but 498 hospitals treated 350,459 in-patients during the year. In the case of 296 hospitals with 23,621 beds, the daily average number occupied was 18,705 (79 per cent.). The enormous volume of work done is shown by the fact that in 374 hospitals 219,196 surgical operations were performed during the year. The ratio of medical to surgical cases found in sixty-eight hospitals from which such statistics could be obtained showed that the medical cases formed 21 per cent. and the surgical 72 per cent. of the total. It is suggested that these figures do not indicate that medical diseases are disappearing, but rather that people no longer shun the hospital from the dread of an operation. On the financial side it was found that the excess of expenditure over income for the hospitals under review was £475,627; approximately 75 per cent. of this deficit arose in the large general hospitals with 100 beds or over. The Joint Council is recommended to make a special public appeal in the hope of raising a million a year, and, further, to afford the hospitals facilities for co-operative buying. It is suggested also that the hospital work in each area should be co-ordinated by bringing the smaller hospitals into relation with the appropriate large or "key" hospitals. Arrangements would be made for the transport of patients and for the receipt of severe cases from small hospitals by the central hospital, and the return of slighter cases to the cottage hospitals and convalescent homes. It is further proposed that all pathological and bacteriological work of each group of hospitals should be conducted at the central hospital. We must defer further comment upon this interesting report to a future occasion.

VOLUNTARY MOVEMENTS IN NERVE LESIONS.

THE vast number of nerve injuries produced by the war has led to a new valuation and revision of many textbook "facts" as to the innervation of muscles and their actions. The pendulum has swung probably too far in the revolutionary direction, and a paper by Wood Jones,[1] in which the actions of muscles is examined in some detail, may act as a corrective to those who are apt to cover their ignorance by wilfully abandoning pre-war knowledge and setting up standards of their own. Despite recent teaching, Wood Jones figures the supinator longus and pronator radii teres as useful flexors of the elbow-joint. His brief analysis of many of the movements of the hand and fingers is lucid, and many "trick" movements, which may be mistaken for evidences of recovery in a given nerve, are exposed. One of the most interesting of these is the extension of the wrist by the interossei in case of complete musculo spiral division. This necessitates flexion at the metacarpo-phalangeal joints; the movement cannot be executed with the fingers extended. There is a discussion of the movements possible in injuries of the musculo-cutaneous, musculo-spiral, ulnar, and median nerves which will repay study. The estimation of the condition of injured nerves is always a very difficult and at best an uncertain procedure. A patient told to perform a movement sets himself to accomplish the feat without a thought for the particular muscles which he will or ought to use. For this reason, in nerve lesions the subject will use any muscle which has any power whatever to move the joint in question, and therefore the analysis of such movements requires close observation.

DINNER TO SIR GEORGE MAKINS.

THE complimentary dinner to Sir George H. Makins, G.C.M.G., C.B., P.R.C.S., was held on Monday evening, May 10th, when more than 100 medical men met together at the Hotel Great Central, with Sir Cuthbert Wallace, K.C.M.G., in the chair. Those present included Sir William Arbuthnot Lane, Sir Charles and Sir Hamilton Ballance, Sir Seymour Sharkey, Sir James Porter, Sir Felix Semon, Sir Walter Fletcher, Sir Archibald Reid, Sir W. G. Macpherson, Sir James Magill, Sir Robert Fox Symons, Sir C. Gordon Watson, Professor Arthur Keith, Dr. T. D. Acland, Dr. H. P. Hawkins, Mr. W. H. Battle, Mr. Raymond Johnson, Professor F. G. Parsons, Mr. Percy Sargent, Mr. J. Sherren, Colonel G. H. Barefoot, Mr. A. H. Cheatle, Dr. J. S. Fairbairn, Sir John MacAlister, Dr. F. F. Caiger, Dr. Alfred Cox, Mr. F. G. Hallett, and Dr. H. G. Turney, with many other members of the staff and former students of St. Thomas's Hospital. Messages were received from Lord Dawson and a number of colleagues who could not be present. The Chairman, in proposing the toast of the evening, gave personal recollections of Sir George Makins at St. Thomas's in former days, during the South African war, and as the first consultant surgeon with Sir Anthony Bowlby in the Great War. Sir Cuthbert Wallace spoke of the affection and trust inspired by their guest, of his kindly tolerance, and his calm and happy nature; to himself Sir George had been surgical father and friend. The toast was supported by Lieut.-General Sir John Goodwin, D.G.A.M.S., Mr. E. F. White, F.R.C.S., Sir John Bland-Sutton, and Sir George Savage. Sir John Goodwin said that his own debt to the teaching, writing and example of Sir George Makins was shared by the army, which had paid him the compliment of piling task after task upon him. An American colleague in France had aptly described their guest and their chairman as "two of the bulliest of surgeons." All who had worked with Sir George Makins admired his steadfastness of purpose, his rectitude, and human sympathy. Mr. White added the tribute of a general practitioner and a friend of forty-five years' standing. Makins, he said, always played the game as a consultant, and gave real help to the general practitioner, whether the patient were rich or poor or one of the doctor's own household. Sir John Bland-Sutton, speaking as a vice-president, described Sir George Makins as the most popular president of the Royal College of Surgeons within living memory. Their friendship began in 1887, when they took part in founding the Anatomical Society

[1] *Journ. Anat.*, 1919, 54, 41.

of Great Britain. A great tradition in the surgery of gunshot wounds had been carried on in direct succession by William MacCormac, George Makins, and Cuthbert Wallace; Makins's work on injuries to the blood vessels was a milestone in the progress of surgery. Sir George Savage, speaking of an unclouded friendship since the time when Sir George Makins was his pupil at Bethlem Hospital forty years ago, said that in all the relationships of life their guest's urbanity and humanity shone forth. Sir George Makins, who was received with great enthusiasm, expressed the pride he felt in seeing so many friends gathered round to do him honour. Among them was represented every one of the activities of his career. He thanked all his friends for the tribute they had paid him. With reminiscences of the past and kindly references to many of those seated around him he touched on his long association with the Army Medical Service and its succession of director-generals, on his relations with the Naval Medical Service and its heads, on St. Thomas's Hospital and the inspiring influence of Sir William MacCormac in war surgery, and on the great services rendered to medical education by the Royal College of Surgeons of England.

AUXILIARY R.A.M.C. FUND.

FROM the brief report, published at p. 689, of its recent annual meeting, it will be seen that the Auxiliary Royal Army Medical Corps Fund is doing good work. Since the last annual meeting it has given help to the orphans of thirty-one officers of the Auxiliary Royal Army Medical Corps who lost their lives owing to the war. As in many instances several children of the same officer were helped, the total number assisted was considerable. The fund, which also makes grants to the orphans of the rank and file, derives the major part of its income from subscriptions, which may be sent to the honorary secretary, Sir William Hale-White, K.B.E., M.D., at 11, Chandos Street, Cavendish Square, W.1. No one can doubt that the fund is needed, and we have reason to believe that it is judiciously and economically administered. It is therefore one which makes a strong appeal for the support of the profession.

THE Croonian Lecture of the Royal Society will be given by Professor W. Bateson, F.R.S., on June 17th. The subject is genetic segregation.

SIR WILLIAM OSLER, Regius Professor of Medicine in the University of Oxford, left estate of the gross value of £15,865, with net personalty £11,650. He bequeathed his medical and scientific library, as catalogued by himself, to the medical faculty of McGill University, Montreal. The remainder of his property he left to Lady Osler, but on her decease, or earlier if she should wish, Sir William Osler directed that his residence, 13, Norham Gardens, Oxford, be given to the Dean, Canons, and Governing Body of Christchurch as the residence of the Regius Professor of Medicine. Sir William Osler's only son was killed in the war.

Medical Notes in Parliament.

Financial Position of London Hospitals.

MR. R. YOUNG, on May 6th, asked the Minister of Health whether he was aware that some of the London hospitals were in a serious financial position, and that appeals were being made in elementary schools to the children, and through them to the parents, for assistance to prevent some of the hospitals partly closing down or otherwise curtailing their very necessary and beneficent work; and whether any steps were likely to be taken by legislation or other means to place these institutions on a sound footing to carry on their activities in the interests of the nation. Dr. Addison replied: In view of the urgent representation which has recently been made to me in regard to the financial position of certain of the London hospitals, I am considering what steps can be taken to meet a difficulty which I hope is only temporary, but I am not yet in a position to make a definite statement on this matter, which necessarily involves far-reaching issues.

Election of Direct Representative to Fill Vacancy.

Sir Henry Craik, on May 10th, introduced a bill to amend Section 8 of the Medical Council Act, 1886, under which a direct representative elected to fill a vacancy is elected for a full period of five years. The purpose of the bill is to provide that a direct representative elected to fill a vacancy shall hold office for the unexpired period of the term of the member whose place is to be filled. This course is usual, so as to avoid overlapping periods of office. The bill is backed by Captain Elliot and Dr. Nathan Raw.

Doctors and Motor Car Taxation.

Sir W. Joynson Hicks asked the Minister of Transport, on May 5th, whether it was intended under the new scheme for the taxation of motor vehicles to grant any special privileges, exemptions, or rebates in respect of motor cars used by doctors and veterinary surgeons, in accordance with the privileges enjoyed by them under the present system of taxation. Mr. Neal replied: There is no intention to give special privileges to these classes of motor car users. This question was carefully considered by the Departmental Committee on the Taxation and Regulation of Road Vehicles, and the reasons for the withdrawal of existing privileges are set out in paragraph 23 of their report. The rebates which these users now enjoy were conceded partly in order to bring them into line with commercial motor vehicles, which pay no Inland Revenue duty and are entitled to a rebate of half the duty on motor spirit. With the abolition of preferential treatment to commercial users, the case for medical practitioners and veterinary surgeons necessarily fails. There could be no justification for exempting members of two professions only. Every person using a motor car in connexion with his profession or business would be equally entitled to preferential treatment. The concession to medical practitioners and veterinary surgeons was made when motor cars were taxed as luxuries. This is now no longer the case. The proposed tax is in fact a tax upon road users for road purposes.

War Pensions Bill.

Mr. Macpherson, on May 5th, moved the Second Reading of the War Pensions Bill, the chief object of which is to provide that the administration of post-war pensions shall be undertaken by the appropriate service departments instead of by the Ministry of Pensions. For this particular purpose the end of the Great War is defined as July 31st of the present year, and from that time new awards are "post-war pensions." The Government made this proposal in the interests of economy and efficiency, so that it should not be necessary that post-war pensions should be considered by two different departments—that was, by the Ministry of Pensions as regards disability and by the Service Department as regards service recognition. The business of pruning the gigantic organization of the Ministry of Pensions had already begun. The training of disabled men had been transferred from the Pensions Ministry to the Ministry of Labour; and it had been decided not very long ago—not by the wish of the Government nor by the wish of the Ministry of Pensions, nor, he believed, by the wish of the Ministry of Health—that the medical and surgical treatment of discharged and disabled soldiers should in two years' time be given to the Ministry of Health. This was the decision of the House of Commons. Nothing in the present bill interfered with the powers of the Ministry of Pensions or the Pensions Committee, except that their operations would be confined to the circumstances and happenings of the period from August 4th, 1914, to July 31st, 1920. In speaking of the importance of economy, Mr. Macpherson said he believed the administration of the Pensions Department cost as much as five millions a year. Another feature of the bill was a clause to substitute for the present county committees local committees acting independently over wide areas within a county. The local committees at the present time had control over the expenditure of 24 million sterling. Mr. Macpherson praised the public spirit of these committees, but said that the new arrangement would tend to greater economy, and there was a further proposal for the Government to have powers to appoint a finance officer who, if need be, would take charge of the local finances in any exceptional case. In one respect the bill would give the Pensions Ministry new duties, in that it was proposed to transfer to the Ministry the award of wound pensions to officers, hitherto undertaken by the

War Office or the Admiralty. Amongst other changes intended under the bill was one to give the Minister discretionary powers for the restoration of pensions forfeited by men on conviction and imprisonment; to give the Ministry of Pensions definite power to control the children of officers or men who had died on service or were still on active service, this power to be placed in the hands of a particular representative of the Ministry.

There was some discussion, but the second reading was given without division.

New Select Committee on Pensions.—At the instance of the Government, on May 7th, the House of Commons ordered the appointment of a select committee to inquire and report upon (1) the position as to employment and training for ex-service men disabled in the war; (2) the payment of grants by the Civil Liabilities (Military Services) Department; and (3) pensions for officers and other ranks of the mercantile marine so far as they were engaged in war service. Lieut.-Colonel Allen, Mr. Betterton, Sir John Butcher, Captain Coote, Major Entwistle, Lieut.-Colonel Sir Frederick Hall, Sir Henry Harris, Captain Loseby, Lieut.-Colonel Parry, Mr. Pennefather, Captain Redmond, Mr. Roberts, Mr. J. Taylor, Mr. Stephen Walsh, and Major Mackenzie Wood were nominated members of the Select Committee.

Sale of Quinine Stores.—In reply to Mr. Glanville, on May 6th, Mr. Hope, Financial Secretary, Munitions Ministry, said that a considerable quantity of compressed tablets of quinine was recently sold by the Disposal Board to Messrs. John Bell and Croyden, Ltd. The quantity of quinine salts contained therein amounted to approximately 270,000 oz.; fifty-six invitations for tender were issued, and amongst those who offered were Messrs. Whiffen, Messrs. Howards, and Messrs. T. and H. Smith, Ltd. The price paid was slightly in excess of the valuation made by the expert advisers of the Department, and was substantially larger than the next highest offer received. The official responsible for the disposal of these tablets was a civil servant of many years' standing, and was still in the service of the Disposals Board.

Milk and Dairies Bill.—Dr. Addison on May 10th introduced a Milk and Dairies Bill to amend the Milk and Dairies Act, 1915. The main objects of the bill are to provide for the licensing of milk producers and dealers, for the definition and grading of milk, and to give power to local authorities to undertake the supply of milk in their areas.

Paper Supplies.—The President of the Board of Trade said, on May 10th, in reply to questions by Sir R. Cooper, that in consequence of the great demand and the general shortage of supplies of papermaking materials throughout the world, prices had risen everywhere to a very high level. He did not see what action the Government could take to ameliorate the situation, which was entirely due to economic causes. It was true that waste paper merchants were experiencing difficulty in disposing of waste paper to paper manufacturers, which appeared to indicate that persons who wanted material for the manufacture of paper preferred new and original supplies to waste paper; this would seem to indicate that the shortage of pulp was not so great as some people had imagined. On the suggestion that steps might be taken to ensure supplies of raw materials to Austrian paper mills, which made excellent paper before the war, Sir R. Horne said that supplies of raw materials were wanted in America and Canada as badly as here.

Answers in Brief.

Mr. Bonar Law has stated that it is intended to bring the National Health Insurance Bill into operation on July 5th, 1920, and that he hoped it might be read a third time this week.

The Minister of Transport has stated that the Committee on Motor Taxation early in its investigations indicated a preference for a petrol tax. On further consideration it arrived at the conclusion that it was impracticable. He undertook to publish the interim report on the subject.

The question whether the Government shall reconsider cases of hardship owing to pensioners being refused grants by the Civil Liabilities Commissioners on the ground that their applications are too late has yet to be determined.

The question of increasing the pensions of pre-war pensioners is now being considered by a Cabinet Committee.

The Government cannot make any definite forecast as to the period during which it may be necessary to continue the work of the Ministry of Food. A bill to extend its life will shortly be introduced.

Under the Budget proposals the amount of direct taxation per head of the population of the United Kingdom will be £14 7s. in 1920-21.

Eaton Hall, Chester, is the only remaining hospital for convalescent soldiers, but steps are being taken to transfer the patients, and it is hoped that the Hall will be vacated within the next two or three weeks. The number of patients treated during the first three months of the year was—January 119, February 75, and March 113.

Sir James Craig has stated that the qualification for participation in naval prize money is service in a seagoing offensively armed ship of war. In these circumstances claims based on hospital ship service would not be admissible.

The Government hope to introduce the Dentists Bill before the end of the month.

England and Wales.

School Medical Officers' Salaries.

At a meeting of the Devon Education Committee, on May 6th, at Exeter, the secretary stated that though the salary of the school medical officers had been put at £400 a year, rising to £500, the annual increments had not been decided upon. In reply to a question, the County Medical Officer of Health (Dr. Adkins) said that the medical papers refused to accept advertisements for medical officers at a salary less than £500 to start with. He had now received the resignation of Dr. E. L. Sturdee, of Barnstaple, who wrote that he found it impossible to live on the salary paid by the committee, and he was accepting a better paid post. Advertisements were inserted in the local newspapers. Six applications were received, but five had since been withdrawn, a notice having been issued that before applying for a position under the Devon County Council doctors should communicate with the British Medical Association. The fact was that the Devon County Council was on the "black list." There was now only one applicant for the appointment. Dr. Mackenzie said he was not a member of the British Medical Association, and he was opposed to all trade unions, but he liked to look at these matters in a reasonable way, and if they wanted a good service they must pay for it. Dr. Adkins said the one remaining applicant was Dr. C. G. Mathews, who had done a good deal of work in Devon and came with strong testimonials. The appointment was for the Barnstaple district. He would have to work with the medical men in North Devon, and would be looked upon as a "blackleg"; it would be an awkward position. Dr. Adkins mentioned that the candidates who withdrew stated that they would be glad to take the position at a starting salary of £500. It was agreed to appoint Dr. Mathews, and that increments should be £25 per annum.

Dr. C. P. Mathew of 12, Thornton Hill, Exeter, asks us to state that he is not the medical practitioner who has been appointed assistant school medical officer for the Barnstaple district under the Devon County Council.

We have since been informed that Dr. C. G. Mathews also withdrew his application.

Assistant Medical Officers at Mental Hospitals.

It has been decided to increase the establishment of assistant medical officers at each of the larger mental hospitals in the county of London (that is, with over 2,000 patients) to eight. Hitherto the number has been six, with a locumtenent during the annual leave season. The services of the locumtenent will be dispensed with under the new arrangement. Among the reasons for this increase of establishment is that under the new conditions of employment and promotion for the nursing staff a greatly increased number of lectures has to be given by the medical officers. The suggestion has been made that the higher standard of nursing now required might operate to reduce the amount of professional medical care necessary; but the Asylums Committee is advised that this is not the case, and that the patients must suffer if the pre-war standard of medical care is not maintained. A further factor which affects the question is that the Council has provisionally agreed to the principle of granting study leave to assistant medical officers in the mental hospitals' service, with a view to their obtaining diplomas in psychological medicine; they are being give facilities for attending the course of lectures in psychological medicine instituted at the Maudsley Hospital.

Prevention of Venereal Disease.

Early this year Dr. A. Mearns Fraser, M.O.H. Portsmouth, prepared a special report on the prevention of venereal disease, in which, after alluding to the prevalence of these diseases, he expresses the opinion that there are no infectious diseases so easily guarded against as venereal diseases. The report states that application of a disinfectant to the male genital organ within an hour of exposure to infection can be relied on to prevent the acquisition of venereal disease, and quotes the names of eighteen medical men (eight of whom are members of the executive committee of the Society for the Prevention of Venereal Disease) who have allowed their names to be

used in support of the opinion that "self-disinfection, promptly and efficiently carried out, is an almost certain preventive against venereal disease." The report goes on to combat the arguments which have been put forward against self-disinfection, and to discuss the ethical aspects of the question. Dr. Fraser recommended the Portsmouth borough authorities to take such steps as may be necessary to spread a knowledge of the means of self-disinfection; the procedure advised is that advocated by the Society for the Prevention of Venereal Disease—namely, the swabbing of the male genital organ, immediately after exposure to infection, with a solution of 1 in 1,000 potassium permanganate, and the rubbing in of a 33 per cent. calomel ointment. The report was approved by the Health and Housing Committee on March 3rd, and the policy which it suggests was adopted by the borough council on April 27th.

King Edward's Hospital Fund for London.

The annual meeting of the general council of King Edward's Hospital Fund for London, to receive the accounts and the report for the year 1919, was held at St. James's Palace on April 30th, the Earl of Donoughmore, K.P., being in the chair. Among those present were Viscount Burnham, the Hon. Sir Arthur Stanley, Sir Norman Moore (President of the Royal College of Physicians), Sir George Makins (President of the Royal College of Surgeons), and Lord Somerleyton and Sir Frederick M. Fry, honorary secretaries. Lord Somerleyton alluded to the council's deep regret at the death of Sir Henry Burdett, and a resolution of regret and condolence was passed. A cablegram was read from the Prince of Wales, President of the Fund, expressing his regret that his absence in Australasia made it impossible for him to be present at the annual meeting. Lord Donoughmore, in moving the adoption of the report, compared the present annual expenditure of the London hospitals with that of 1897, when the Fund was inaugurated by the late King Edward VII. In that year the total expenditure was £700,000 and the annual deficit was £70,000. The estimated expenditure of the London hospitals for 1919 was about £2,100,000, with a deficit of £200,000. Mr. M. C. Norman, Governor of the Bank of England, seconded the adoption of the report, the most important features of which were summarized in our issue of March 27th, p. 451.

Maternity and Child Welfare Arrangements in London.

The Public Health Committee of the London County Council has agreed, as an experiment for one year, that the appropriate officers of the Lewisham Borough Council should exercise the powers of infant life protection visitors and of lying-in homes inspectors. The argument in favour of the new arrangement is that it is in accord with the general principle governing local health administration that the local sanitary authority should be responsible for the internal sanitary conditions of homes. Further, as the local medical officer of health is the officer responsible for carrying out the maternity and child welfare scheme in the borough, it was felt to be desirable that he should be associated as closely as possible with the kindred work of the supervision of nurse-children and the inspection of lying-in homes.

The 1st and 2nd South Midland Field Ambulances, Birmingham.

A successful smoking concert was held on May 7th, at the White Horse, Birmingham, to commence the recruiting for the 1st and 2nd South Midland Field Ambulances. Lieut.-Colonel C. Howkins, C.B.E., D.S.O., T.D. (O.C. 1st S.M.F.Amb.), was in the chair. Lieut.-Colonel R. A. Broderick, D.S.O., M.C. (O.C. 2nd S.M.F.Amb.), and Majors H. Boeddicker, W. Bowater, M.C., Mundy Cox, M.C., Captain Hirst, M.C., Drs. Parsons, Teill, and many others who were interested in the re-formation of the ambulances, were present. The Chairman stated that it would be a great slur on the city of Birmingham if two ambulances could not be quickly raised up to the strength laid down for the peace establishment and carry on the traditions of those Birmingham field ambulances which did such excellent work with the 48th and 61st Divisions. Lieut.-Colonel R. A. Broderick, on behalf of the 2nd S.M.F.Amb., stated that he was prepared to do his best to carry on the ambulance and make it the success it was in the past, and, if possible, have the transport section again at Sutton Coldfield. Speeches in aid of recruiting were also made by Majors Bowater, Cox, and Captain Hirst, and from the large numbers of old members of the units present and the enthusiasm displayed little difficulty is anticipated in raising the units. An excellent musical programme was arranged and a most enjoyable evening spent.

Scotland.

British Orthopaedic Association.

A special meeting of the British Orthopaedic Association will be held in Edinburgh on June 4th and 5th under the presidency of Sir Robert Jones. At the morning session on Friday, June 4th, Mr. R. C. Elmslie will open a discussion on the principles of the correction of congenital talipes equino-varus, and particularly of inveterate and relapsed cases; Mr. John Fraser will speak on the results of tendon transplantation for paralyses of the muscles below the knee; Mr. S. Irwin on acute arthritis of the hip in infants; and Mr. Harry Platt on traumatic dislocation of the knee-joint. At the afternoon session Professor Putti of Bologna will speak on the end-results of arthroplasty of the knee-joint; Dr. Murk Jansen of Leyden on hallux valgus, rigidus and malleus; Mr. A. P. Mitchell will read some notes on bone, fascia and tendon grafting; and Miss Forrester-Brown will present a paper on the possibilities of end-to-end suture after extensive nerve injuries. Mr. John Fraser will give a demonstration of cinematographic records illustrating the various types of gaits in children. A dinner will be held in the evening. On the morning of Saturday, June 5th, Sir Harold Stiles will demonstrate cases at the Edinburgh Royal Infirmary, and will operate.

The Stillbirths Rate in Edinburgh.

During 1919 283 stillbirths occurred in Edinburgh, and since the birth notifications numbered 6,280, the stillbirths rate was almost exactly 45 per 1,000. The births registered numbered 6,060. Of course the notified births, if complete, ought to tally with the registered *plus* the stillbirths, and therefore the notifications ought to have been 6,343 instead of what they actually were—6,280. This would seem to show some leakage in the notification of births returns. The neo-natal deaths for 1919 showed a rate of a little over 41 per 1,000 live births. By adding the stillbirths and the neo-natal mortality rates together, it follows that in Edinburgh 86 infants out of every 1,000 brought to the last two months of ante-natal life died either soon before, during, or within a month after birth. Roughly, therefore, the population of Edinburgh lost something like 500 babies from these two causes in the year. During the previous year (1918) the number of births notified was 5,400 and the stillbirths were 238, the stillbirths rate being therefore 44 per 1,000 notifications. This reveals a somewhat steady proportion of stillbirths. So far as 1920 has gone the stillbirths rate is 44.4. The details were as follows: January—notifications 831, stillbirths 44, rate 52.9; February—notifications 688, stillbirths 28, rate 40.7; March—notifications 941, stillbirths 40, rate 42.5; April—notifications 738, stillbirths 30, rate 40.6. So that, although there are variations in the rate from month to month, the annual rate remains fairly steadily round about 44 and 45 per 1,000 births (living and still).

Small-pox.

The number of cases of small-pox under treatment at the Glasgow Fever Hospital was nearly doubled during last week. The total number was 99, 17 new cases having been received during the week-end. Most of the cases have occurred in the east end of the city, but one was removed last week from a house in Langside. It was mentioned last week that one case had occurred in Edinburgh in which no connexion with Glasgow could be traced. A second case was notified on May 7th in a middle-aged man who had recently paid a visit to friends in Glasgow. The Scottish Board of Health has issued a memorandum to medical practitioners stating that there is

reason to fear wide dissemination of the disease, which is of a severe type, causing marked fatality among the unvaccinated. Medical practitioners are invited to co-operate closely with the public health department in efforts to prevent the spread of the disease and to secure early diagnosis of any suspected case. The number of unvaccinated children is known to be very high, and practitioners are asked to use their influence to induce persons to resort to vaccination. The Board has also issued a memorandum to medical superintendents of infirmaries and hospitals warning them of the danger of the introduction of the disease. The Board has notified medical officers of health and clerks to local authorities that it will keep a supply of vaccine in Edinburgh for issue to medical officers of health; it is the vaccine prepared by the Government lymph establishment, London, and will be supplied free on application to the Board, 83, Princes Street, Edinburgh. The medical officer of health for Edinburgh has issued an appeal to citizens to protect themselves by revaccination. A considerable number of cases have occurred in persons who were vaccinated in infancy but have not since been revaccinated.

Ireland.

ULSTER MEDICAL SOCIETY.

A SPECIAL meeting of the Ulster Medical Society was held in the Medical Institute, Belfast, on May 6th, to discuss the relationship of the Ulster Medical Society to questions of public health arising in Belfast and the neighbourhood. Mr. Andrew Fullerton, C.B., C.M.G., F.R.C.S.I., the president, occupied the chair, and the subject was discussed at considerable length in all its aspects, and it was finally agreed unanimously that certain meetings of the society should be held, which would devote themselves entirely to public health and kindred subjects. After full discussion, at such meetings, the society could take whatever steps they considered necessary to lay their views before the different public health authorities.

GRAYMOUNT HOSPITAL, BELFAST.

In the abstract of the report of Sir Henry Gauvain on the suitability of Graymount as a place for the treatment of non-pulmonary forms of tuberculosis amongst Belfast children, his opinion was accidentally misstated. In his full report Sir H. Gauvain said that three objections had been pointed out to him—that is, a clayey soil, the dampness of the Lagan Valley, and at times a smell from the foreshore of the Lough. In his opinion, however, these objections were not of such a grave nature as to render the house unsuitable for a surgical tuberculosis hospital.

Correspondence.

DUODENAL ULCER AND THE HYPERTONIC STOMACH.

SIR,—The quick, sure, and permanent cure of duodenal ulcer which Mr. John Morley, in his letter to the JOURNAL of May 8th, rightly described as following gastro-enterostomy is no doubt a triumph for the abdominal surgeon. But it is none the less a confession of failure that surgical treatment should be required at all—failure on the part of the physician who has not effected a quick, sure, and permanent cure by medical means; the practitioner who has not recognized the premonitory signs of ulcer and so prevented its development; the medical schools which have not taught their students how these signs can be recognized; the pathologists who have been too much interested in the pathology of the dead and of the lower animals to investigate the pathology of ulcer in the living man; and the Government which has not provided the money to staff and equip institutions, which would fulfil the objects described by Dr. Tyson in his letter of May 1st, in which people of every class could benefit by the modern methods of investigation in the earliest stages of disease.

Like Mr. Morley, I have seen a few exceptions to the rule that duodenal ulcer is associated with a small and rapidly emptying stomach. But what rule is there without exceptions, and what evidence have we that these exceptional cases did not conform to the rule in their earliest stages, the dilatation and delayed evacuation being due to achalasia or spasm of the pylorus, either of which may result from an ulcer in the neighbourhood, even before the actual sphincter is involved?—I am, etc.,

May 9th. ARTHUR F. HURST.

AORTITIS AND AORTIC REGURGITATION.

SIR,—In commenting upon Dr. J. E. MacIlwaine's paper I desired to draw attention to a feature of the morbid anatomy of aortic regurgitation associated with syphilitic aortitis, and perhaps in doing so appeared to criticize Dr. MacIlwaine. While this was not my intention, I feel that he lays too much stress on the situation of the pain. The most common position of cardiac pain arising from any cause is near the inner end of the third left intercostal space. I am not aware that there is evidence of aortitis causing pain in this situation, except indirectly by interfering with the nutrition of the cardiac muscle.

"The fact that the syphilitic virus gives rise to arteritis, aortitis, endocarditis, and myocarditis is known" is the opinion of Dr. MacIlwaine. Having made 2,500 autopsies, and also having been a careful student of various details connected with the heart, I feel that I am in a position to comment upon such a belief. It may be mentioned that I have never met with a case of syphilitic endocarditis, but, as was stated in a former letter to the BRITISH MEDICAL JOURNAL, the inflammation of a syphilitic aortitis commonly spreads to the aortic valve, causing a fibroid contraction of the cusps. With regard to myocarditis, if gummata of the heart come under the heading of myocarditis, then there is, of course, a syphilitic myocarditis; but apart from that I do not see how the term can be used unless applied to localized patches of disease associated with arteritis of the vessels in the cardiac wall. Such an arteritis of the cardiac vessels, definitely syphilitic, seems to me to be rare. I have only met with one clear example, and that, curiously enough, was after I had given up routine *post-mortem* work.

Degeneration of the cardiac muscle, due to syphilitic disease of the intrapericardial portion of the arch of the aorta, stands in a different category. It is probably the most common cause of sudden death in men between the ages of 45 and 55 or possibly 60.—I am, etc.,

Norwich, May 8th. THEODORE FISHER.

THE EARLY DIAGNOSIS OF SYPHILIS.

SIR,—In reply to the letters under this heading in the JOURNAL of May 1st, we wish it to be understood that we do not for a moment depreciate the value of laboratory methods of diagnosis when properly interpreted; and if the *Practitioner* of May, 1916, is referred to, an article by one of us (Ffrench) will be found which lays great stress on the use and value of laboratory diagnosis. Nevertheless, in cases in which the laboratory findings are negative, it is better practice to rely upon one's clinical experience and put the patient under treatment if the clinical signs are suggestive of syphilis, than to lose valuable time by keeping such cases under indefinitely prolonged observation. It is impossible to make an accurate time limit for such observation, for patients vary so greatly in developing secondary manifestations, and it is well recognized by experienced syphilologists that the first month after infection is the most important regarding the commencement of treatment. It has been our experience that obvious cases of syphilitic chancre have given negative laboratory results from day to day, and we know that in many such cases medical officers have hesitated to make a diagnosis of syphilis on account of the negative laboratory findings. We feel justified, therefore, in laying the greatest stress on the cultivation of clinical experience.—We are, etc.,

C. F. MARSHALL,
London, W., May 8th. E. G. FFRENCH.

TUBERCULOSIS SANATORIUMS.

SIR,—In your issue of May 1st, p. 619, Dr. F. W. Inman makes the alarming, and in my opinion very ill advised, statement that "In sanatoriums a very malignant form is always present in the wards, and those who are admitted

with a mild form probably contract there a severer form and convey it to their family."

During twenty years' experience of tuberculosis in sanatoriums and outside I have never met with a single case which would support such a theory.—I am, etc.,

LEONARD CROSSLEY, M.D.,
County Tuberculosis Officer for Wilts.

May 6th.

EARLY MENTAL TREATMENT AND THE RIGHTS OF THE SUBJECT.

SIR,—In the speech in which the Right Hon. Dr. Addison introduced the Health Ministry Bill, he made explicit reference to "the inadvisability of including under the Health Ministry many judicial questions which are not in any sense medical, such as those that concern the rights of the subject, etc." In face of this declaration from such a high authority, it would seem a little curious to notice in the sketch communicated to your issue of April 10th (p. 515) the remark "that the Lunacy Board of Control will no doubt before long be transferred to that Ministry." In a preceding sentence the function of that Board is stated as "having to do with restraint of the liberty of the patient, with safeguards, etc., and with the protection of the hopelessly confirmed insane."

If so transferred, the Board will doubtless have to leave behind it at the Home Office a large proportion of its duties, for its legal half, at any rate, is intimately concerned with the rights of the subject, and must consequently (in accord with the dictum of the Health Minister) be excluded from the purview of his department.

In a memorial presented in July, 1914, to the Local Government Board, and supported by half the House of Commons, it was expressly urged that to promote the recovery of early uncertifiable mental cases it was both inexpedient and inappropriate that the recuperative hostels or sanatoriums designed for them should have any connexion with the Lunacy Board. The Lunacy Act, 1890, confers on the Commissioners no jurisdiction over any but the certified—that is, the incarcerated—and the protection of the helpless (if properly attended to) will give abundant scope for their energies. It is a sacred trust, involving serious responsibility.

In the communication of April 10th it is noted that the Lunacy Board desires "permissive legislation enabling early mental cases to receive treatment for six months in general or special hospitals or homes without the necessity for certification." I fail to see where any need for legislation to this end arises. General or special hospitals or borough hostels can, under the present law, receive and treat uncertifiable cases at any time, and for any length of time, where no detention is intended. That is the crux. A patient under the Lunacy Act, S. 74, can only be justifiably detained if he is proved to be "dangerous and unfit to be at large." It is somewhat difficult, on p. 516, to disentangle the meaning of one or two sentences dealing with the "detention of patients as voluntary boarders"—apparently a contradiction in terms.

It is, no doubt, a very convenient arrangement for the proprietors of mental homes to have patients consigned to them for detention on the sole recommendation of one doctor (p. 515), without any judicial investigation or appeal. But the ordinary outlook of the public (as the said article sagely comments) has also to be reckoned with, displaying as it sometimes does "a meticulous care for the liberty of the individual." As an instance, recall the defeat of the "Mental Treatment Bill," proposed by the Lunacy Board in 1915.

In devising expedients to evade certification (on the plea of evading "stigma") it is overlooked that the legal procedure of certification constitutes the main bulwark against false imprisonment; and it is highly dangerous to tamper with such safeguards. Better the risk of an evanescent stigma than the peril of a lifelong submersion in helpless misery. It is not the safeguarding procedure of certification that stigmatizes, but the degrading element entailed in detention, coupled with unnecessary indignity, and the loss of all personal and civil rights.

The one hope of an effective check to the constant increase of insanity is the natural and reasonable provision of untainted homes (kept carefully apart from any link with lunacy) which shall afford hope, encouragement, and freedom from apprehension, with bodily care and attractive surroundings, appropriate to the restoration of those highest faculties often temporarily unhinged from quite natural and sufficient causes. Such is the path of common sense. It is a pity that legislation should be invoked to destroy the usefulness of these health-giving methods. Mental homes for uncertifiable cases, free from detention, should immediately be started by the Health Ministry under suitable local committees, on a purely hospital footing. Patients would be controlled during their stay by the rules of the place, but be free to leave on giving a specified notice.

Ex-service men cannot be said to be specially enamoured of the so much admired regimen of military mental hospitals. Cases of acute transient mania—for example, influenzal, puerperal, etc.—ought to be treated in hospitals as delirious cases.

Money spent on half-way houses to asylums will be simply thrown away; whereas mental sanatoriums as above described would prove not only an immense boon to the community and a benefit to doctors, but by their adaptation to the needs of early cases would intercept them on the downward track, and tend eventually to a material reduction in our present huge and unproductive asylum expenditure.—I am, etc.,

London, W., April 17th. S. E. WHITE, M.B., B.Sc.

THE DEATH OF DR. A. P. SPELMAN: A MOVING APPEAL.

SIR,—I take the liberty of appealing to you on behalf of the widow and children of the late Dr. A. P. Spelman of Dunmore, co. Galway. Last week, when returning from a call, his motor car skidded at a badly protected part of the road, and overturning killed him instantly. The deceased was only 26 years of age, and had not his life insured in any way.

Mrs. Spelman and two young children are now left absolutely destitute and totally unprovided for, and in these circumstances I would appeal to your readers for their help.—I am, etc.,

P. J. DELANEY, M.B., B.Ch.

Claremorris, co. Mayo, May 4th.

P.S.—We are circularizing all the local doctors. Subscriptions, which will be duly acknowledged, may be sent to myself or Dr. Heneghan, Ballindine, co. Mayo.

The Services.

HONOURS.

TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon the following officers of the R.A.M.C.,T.F., under the terms of the Royal Warrant of August 17th, 1908, as modified by the Royal Warrant of November 11th, 1918: Lieut.-Colonel Alexander G. Hamilton, O.B.E., and Major Douglas C. L. Orton, attached Welsh Mounted Brigade Field Ambulance; Major Vyner Graham, attached 5th Battalion Yorkshire Light Infantry; and Major George P. Chappel, attached 7th Battalion Middlesex Regiment.

FOREIGN DECORATIONS.

The following decorations have been conferred by the Allied Powers in recognition of distinguished services rendered during the course of the campaign:

By the King of Italy.

Order of the Crown of Italy (Cavalier).—Brevet Major Arthur D. Griffith, R.A.M.C.,T.F.

By the King of Serbia.

Order of St. Sava.—1st Class: Colonel Sir Almroth Wright, K.B.E., C.B., F.R.S., late A.M.S. *4th Class:* Major Cuthbert Lindsay Dunn, I.M.S.; Surgeon Lieut.-Colonel Basil Pares, Royal Horse Guards. *5th Class:* Captain (acting Major) Robert Patrick Starkie and Captain Gilbert Wolridge Rose, R.A.M.C.,S.R.; temporary Captains Edward William Archer, George Herbert Brown, John William Grice, Ernest Eugene Herga, M.C., Orme Stirling Kellett, Frank Harold Looney, Edward Holmes Rainey and William Johnston Symes, R.A.M.C., Gerald Spencer Coghlan, M.B.E., S.A.M.C., and the late temporary Captain Arthur Maxwell Fisher, R.A.M.C.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUND.

THE annual meeting of the Auxiliary R.A.M.C. Fund was held on April 30th, when Lieut.-General Sir John Goodwin, D.G.A.M.S., was in the chair.

Since the last annual meeting the sum of £1,974 has been granted to help in the maintenance of the orphans of 31 officers in the Auxiliary Royal Army Medical Corps who lost their lives as a result of the war; and £2,620 has been granted in the same way to the orphans of 83 of the rank and file, making a total of £4,594 granted and 114 cases relieved in a single year. As frequently several children in a single case were relieved, it will be seen that the total number of persons relieved was considerable.

The major part of the income of the fund is derived from subscriptions, and the committee earnestly hopes that these will continue to be sent to the Honorary Secretary, 11, Chandos Street, Cavendish Square, London, W.1.

DEATHS IN THE SERVICES.

MAJOR LLEWELLYN LANCELOT GRAEME THORPE, R.A.M.C., died at Whitstable on April 23rd last, aged 46. He was the younger son of the late Captain Edward Thorpe, of the 43rd Foot and 27th Madras Infantry, and was educated at University College, London. He entered the R.A.M.C. on June 21st, 1900, and became major after twelve years' service.

Captain Robert Gordon Ball, R.A.M.C., died in Dublin on February 3rd. He was educated at Trinity College, Dublin, where he graduated M.B. and B.Ch. in 1911, and was a member of the West African Medical Staff till he took a temporary commission in the R.A.M.C. as lieutenant on August 14th, 1917, becoming captain after a year's service.

Major Satis Bose, I.M.S., died at Barrackpore, where he was in command of the Indian Station Hospital, on January 5th. He was educated at Edinburgh, where he graduated M.B. and C.M. in 1897, and entered the I.M.S. as lieutenant on June 27th, 1901, becoming major in December, 1912.

Brevet Major Gwilym Gregory James, I.M.S., died on December 19th, aged 35. He was born on June 24th, 1884, and educated at Westminster Hospital, graduating M.B. and B.S.Lond. in 1907. After filling the posts of demonstrator of histology and house-surgeon at Westminster, and of second assistant medical officer at St. Marylebone Infirmary he entered the I.M.S. on January 30th, 1909, and was promoted to captain after three years' service. He was medical officer of the 127th Baluch Infantry, and served in that capacity during the war, being mentioned in dispatches in the *London Gazette* of August 15th, 1917, and receiving a brevet as major on January 1st, 1918.

Universities and Colleges.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

D.P.H.—Margaret H. Grant, G. H. Gunn, R. F. Lunn, A. B. MacDougall, J. M. Ritchie, J. M. Young.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved at the examinations indicated:

SURGERY.—*G. S. Ashby, *C. C. Bennett, *†A. G. L. Brown, †A. Furniss, *†M. Ibrahim, *†A. L. Urquhart.
MEDICINE.—*R. E. Laurent, *†M. Pigott, *†A. L. Urquhart.
FORENSIC MEDICINE.—E. Brazao, J. A. Cohen, M. Pigott, A. L. Urquhart.
MIDWIFERY.—E. Brazao, J. A. Cohen, A. McKenzie, M. Pigott, R. M. Rodriguez, W. H. Summerskill, A. L. Urquhart.

* Section I. † Section II.

The diploma of the Society has been granted to Messrs. M. Ibrahim, M. Pigott, and A. L. Urquhart.

Obituary.

CROYDON has sustained a great loss by the death on April 12th of its late coroner, Dr. THOMAS JACKSON. Advancing years and ill health caused him, in July, 1919, to resign this office, in which he was succeeded by his son, Dr. Beecher Jackson. Thomas Jackson was born at Torrington, North Devon, in 1846, and took the B.A.Lond. at the age of 21. In 1870 he was Congregational minister at Launceston, but his views on theological questions being in advance of those times he gave up the ministry. He obtained a scholarship at the Middlesex Hospital Medical School, and took the diplomas of L.R.C.P.Ed. and L.S.A. in 1877. He became M.R.C.S. in 1878, and was appointed resident obstetric officer at the Middlesex Hospital. He settled in practice at Thornton Heath. He was appointed coroner in 1889. A strong Liberal, he took a keen interest in local and other politics, and did much to improve the social condition of his neighbourhood, being largely instrumental in the opening of Thornton Heath recreation ground, the polytechnic, and the free library. He was one of the first aldermen of the borough of Croydon, and a justice of the peace. Much beloved, his death will be deeply regretted by all who came in contact with him. As a coroner he was always sympathetic, tactful, and kind, as a public man—although a keen fighter—always good-tempered, stimulating both friends and foes, and he lived long enough to see some of his ideals universally adopted. From all deepest sympathy will be with his widow and four children, two of whom are members of the medical profession.

WE regret to record the death of Dr. CHARLES AUGUSTUS THORNE, M.B.E., the senior medical practitioner in Dore and Totley, Derbyshire, which occurred on April 24th, in his 63rd year. The cause of death was heart disease, brought on by continued overstrain during the war. For five years he served as M.O. to the Dore V.A.D. Auxiliary Hospital, and his kindness to the wounded will long be remembered by them. He devoted all his spare time to the wellbeing of the "Boys in Blue"; and two or three were generally to be seen accompanying him on his long country rounds. He also served on the Recruiting Board in Sheffield. In civil practice he was beloved by rich and poor alike, and served the district for long faithfully for about thirty years. He took the L.R.C.P., L.R.C.S.Edin. in 1885, previously he had served as a cadet in the Royal Navy. In later years he became a county magistrate, and was also medical officer to the Ecclesall Union and Cherry Tree Orphanage. He was laid to rest in Ecclesall on April 26th, large numbers of his old friends and patients attending the funeral.

THE death of Dr. HENRI TRIBOULET calls for a few words of tribute to his memory, if only because he was the honorary secretary of the committee in Paris which arranged the visit of French doctors to London in October, 1904, the first evidence of the growing sympathy between the two countries, which came to fruition in the *entente cordiale*. Those British doctors who shared in the return visit to Paris in the following spring will recall that the perfection of the arrangements in Paris was largely due to his organizing powers. Dr. Triboulet was born in 1864 and began practice in Paris in 1893. He became médecin des hôpitaux and devoted himself specially to the study of diseases of children, a subject to which he made many important contributions. He was joint author also of a *Traité de l'alcoolisme*, published in 1905, in which that difficult subject was treated with scientific impartiality. It was, however, as a practising physician, and more especially as a teacher, that Dr. Triboulet attained distinction. His enthusiasm, his high standard of conduct, and his conscientious devotion to duty, endeared him to all his pupils. He died, after a long and painful illness, last February.

DR. JOHN KERR BUTTER of Cannock passed away on April 29th after an illness of ten days, in which erysipelas and kidney trouple played a leading part. He received his medical education in the University of Aberdeen and graduated M.B., C.M. in 1879 and M.D. in 1881. He settled at Cannock, Staffordshire, in 1887; as police surgeon he established a wide reputation, and was considered an excellent witness in medico-legal cases. He also did much useful work for the St. John Ambulance Association both as lecturer and examiner. He was a man of fine physique; he possessed in a marked manner a racy Scottish humour, and was well versed in Burns literature and song. He established a fine collection of animals and birds. The funeral service was in Cannock Parish Church on May 4th, and the thousands who thronged the streets of Cannock testified to his popularity in the district. The body was taken to Glasgow for cremation.

WE regret to record the death, which took place very suddenly on April 24th, at the age of 53, of Dr. RICHARD LUMLEY ROBERTS, of Bethesda, North Wales. He was born in London in 1867, and afterwards lived at Plas Hwfa, Talybont; he was educated at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. in 1896. He was greatly respected in Bethesda, where he enjoyed a large practice. Dr. Lumley Roberts, who was a member of the North Carnarvon and Anglesey Division of the British Medical Association, leaves a widow and one child.

LIEUT.-COLONEL WILLIAM KINGTON FYFFE, New Zealand Medical Corps, died at Wellington, New Zealand, after an operation, on April 23rd. He was the eldest son of the late Deputy Surgeon-General William Johnston Fyffe, R.A.M.C., and was educated at Cambridge and St. George's Hospital, graduating B.A. in 1885, and M.B. and B.C. in 1890, also taking the L.S.A. in 1890, and the M.R.C.P.Lond. in 1893. After serving as house-physician and medical registrar at St. George's, and assistant physician and pathologist at the Victoria Park Hospital for Diseases of the Chest, he went to New Zealand, where he settled in practice at Wellington. He served at Gallipoli as medical officer with the 4th New Zealand contingent.

Medical News.

SIR STCLAIR THOMSON, M.D., has been awarded the Médaille de la Reconnaissance Française in silver for valuable services as a specialist in laryngology.

DR. JAS. SCARTH SPENCE LOGIE of Kirkwall, who took the diploma of L.R.C.P.Edin. in 1841 and graduated M.D. in 1842, celebrated his 100th birthday on May 11th. Among the congratulatory messages received was one from the King.

THE annual general meeting of the Chelsea Clinical Society will be held at St. George's Hospital Medical School on Tuesday, May 18th, at 8.30 p.m., when the retiring president, Dr. T. B. Hyslop, will deliver an address.

THE annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant on Tuesday, June 8th, at 7.45 p.m., Major-General G. F. A. Harris, C.S.I., in the chair. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S. (ret.), 63, Addison Road, Kensington, W.14.

SIR ROBERT ARMSTRONG-JONES will begin a course of four Gresham Lectures on physic, at Gresham College, Basinghall Street, E.C., on Tuesday, May 18th, at 6 p.m. The subject of the course is "The vegetable parasites affecting man, and the diseases caused by them." Admission is free.

AT the Congress of Dermatology and Syphiligraphy, held at Rome last December, a proposal was made to found a biennial prize named after the well-known specialist, Professor Tommaso de Amicis, for the best Italian work on dermatology. Professor Ducrey, of the University of Rome, was elected President for the forthcoming session.

THE final arrangements for the Congress of the Royal Institute of Public Health in Brussels have now been made. The inaugural meeting on Thursday, May 20th, will be attended by the King of the Belgians. On the previous evening the delegates and members will be received at the Palais des Académies by the Brussels Organization Committee. There will be seven sections, in all of which papers will be read and discussions held. Full particulars can be obtained from the honorary secretary, 27, Russell Square, London, W.C.1.

THE programme for the fourteenth French Medical Congress, which will be opened in Brussels on May 19th, is now complete. The chief subjects for discussion are syphilis of the cardio-vascular system, the importance of lipoids in pathology, and the value of artificial pneumothorax. Further particulars can be obtained on application to the Secrétaire-Général, 22, rue Joseph II, Brussels. An excursion to Yser and the Flanders battlefields will be made on the Sunday and Monday following the meeting.

IN a circular letter, dated April 23rd, addressed to local and port sanitary authorities, the Ministry of Health expresses its anxiety to obtain appointments for discharged and disabled officers and men who have been trained by the Ministry of Labour as sanitary inspectors and inspectors of nuisances. It is not suggested that preference should be given to these men over sanitary inspectors who during the war joined the Services or were on public grounds retained in civil employment; where, however, no such suitable candidates offer themselves, the local authorities are asked, in filling vacancies, to appoint men trained under the scheme of the Ministry of Labour.

SIR ARTHUR STANLEY, chairman of the Joint Council of the British Red Cross Society and the Order of St. John, in speaking to the Incorporated Association of Hospital Officers last week, said that there were two alternatives for the hospitals at the present time. The first was that they should be taken over by the State or the municipalities; the Minister of Health had given the most explicit assurances that the Government did not contemplate this course, and would regard the disappearance of the voluntary system as a calamity. The municipalization of hospitals, which meant that they would be supported by the rates, was an unsatisfactory proposal, especially when regard was had to the heavy municipal rates already imposed. The alternative to State or municipal support was the development of the voluntary system. He estimated that at present only 10 per cent. of the population of the country contributed in any way to the hospitals; that 10 per cent. was finding about two-thirds of the total hospital expenditure, and he was sanguine that the deficiency of one-third could be made up from 10 to 20 per cent. of those who did not now subscribe.

THE house of the Royal Society of Medicine will be closed from Saturday, May 22nd, to Tuesday, May 25th, both days inclusive.

DR. A. G. WILKINSON, who this year has completed his eighty-fifth birthday and his fiftieth anniversary as a medical practitioner in Northampton, was presented on May 3rd with a cheque for £150 and an illuminated address as a mark of esteem by his many friends and patients in the district.

DR. J. S. FRASER (Edinburgh) will give a lantern demonstration of microphotographic slides illustrating diseases of the internal ear, at the Central London Throat and Ear Hospital, Gray's Inn Road, on Thursday, May 20th, at 5 p.m.

TUBERCULOSIS officers are invited to attend a meeting at 1, Upper Montague Street, Russell Square, W.C.1, on Friday, May 28th, at 3 p.m., when a proposal to form a Tubercle Group within the Society of Medical Officers of Health will be discussed.

THE Publication Committee of the Zoological Society has issued a notice calling the attention of those who propose to offer papers to the great increase in the cost of paper and printing. This, it is stated, will render it necessary for the present that papers should be condensed, and be limited so far as possible to the description of new results.

MLLE. SENTIS and M. Rimbaud reported to a recent meeting of the Montpellier Medical Society a case of poisoning by veronal in a hysterical person who presented symptoms—somnolence and paralysis of the ocular muscles—suggestive of lethargic encephalitis.

AT an inquest held at Southport it was found that a man had died from poisoning by potassium bichromate. A friend had recommended him to take "bi-something of potash" for neuritis, and in mistake he purchased from the chemist bichromate instead of bicarbonate.

A DEPUTATION from the London and Counties Medical Protection Society, Ltd., was received by Dr. Addison at the Ministry of Health on May 6th. The deputation was introduced to the Minister of Health by Lieut.-Colonel F. E. Fremantle, M.P. The chairman of the society, Dr. C. M. Fegen, on behalf of the deputation, urged upon the Minister the necessity for early legislation to protect the medical officers of venereal disease clinics from being compelled in the witness box to violate the established principles of professional secrecy and to give information of the nature of their patients' ailments and of anything else which came to their knowledge in their professional capacity. These medical officers were being compelled in the law courts, under penalty of imprisonment for contempt of court, to reveal what their patients had communicated to them believing that the information would be treated as absolutely confidential. The effect of this, it was urged, would be disastrous to the working of the clinics, and would militate against the efforts at present being made to cure and eliminate venereal disease. Dr. Addison expressed his cordial agreement with the views of the deputation, and promised to do what he could to promote legislation as suggested by the deputation. He said that he felt sure that public opinion would support the maintenance of professional secrecy in connexion with venereal disease clinics.

TO celebrate the centenary of the birth of Florence Nightingale, who was born on May 12th, 1820, an appeal has been issued to complete the fund for the National Tribute to the Nurses. The appeal is signed by the three matrons-in-chief of the Army, of the Territorial Force, and of the Expeditionary Force during the war, and by the head of the Nightingale School at St. Thomas's Hospital, which was endowed with the proceeds of another fund established by Florence Nightingale after the Crimean war. The object of the appeal is to raise £20,000 to complete the endowment of the College of Nursing, and to create a benevolent fund for the relief of nurses in old age, sickness, or unavoidable pecuniary trouble. "In no way," the matrons-in-chief say, "could the hundred years be more fittingly commemorated than by completing the Nation's Tribute to Nurses, and as the biography of this leader of nurses shows, she was ever mindful of the well-being of those engaged in nursing. We would appeal to all those who realize the value of the gentle ministrations of the trained nurse, to honour the memory of one of England's greatest daughters by sending a contribution of one shilling or more to Miss C. May Beeman, 10, West Bolton Gardens, S.W.5 (Honorary Organizer); or Miss Lloyd Still, Nightingale School, St. Thomas's Hospital, S.E."

Letters, Notes, and Answers.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams; *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

F. B. E. asks for references to recent literature on the treatment of psoriasis, and whether salvarsan has been used with success.

"BACK NUMBER" asks for opinions as to the prognosis and treatment of pseudo-hypertrophic muscular paralysis. The case, a boy aged 12, is in the early stage, without any sign of hypertrophy.

G.P., Lancs., asks for suggestions for treating a lady of 25 who suffers periodically from a "clicking in the ear," after which "her voice seems peculiar," and as she breathes she "hears the passage of the air." To put the ear right she has to hold her nose and "draw in"; she is only free from these symptoms when she has a cold. There is no deafness, and the nose and throat are normal except for slight pharyngeal catarrh; she has no hysterical tendency.

INCOME TAX.

A. R. has been informed by the local inspector of taxes that he cannot be allowed as a deduction from his gross receipts more than one-third of his rent or of the wages and maintenance of the extra maid who attends to the surgery. Is there a chance of successful appeal?

*** A. R. is entitled to deduct a reasonable proportion of the expenses—provided that in the case of the rent it does not exceed two-thirds. So far as our experience goes, one-half is generally allowed in provincial practices, and unless there are special circumstances in the case we consider that A. R. would have a reasonable prospect of success if he presses for that proportion.

A. B. X.—When husband and wife both practise as doctors, what allowances can each claim for rent, rates, servants, etc.; also for repairs to the house? Is it any advantage for them to keep separate books, and make separate claims?

*** Assuming that there is a certain amount of connexion between the two practices, separate claims could not be made, and there would be no advantage gained by keeping the accounts of the two practices apart. The proportion of the general expenses applicable to the practices would depend upon the facts, but of course the same expenditure could not be deducted by *each*—for example, each could not deduct half the rent. Probably the most that would be allowed would be from one-half to two-thirds the rent; the cost of one servant, and the estimated cost of lighting and heating the waiting-room and surgery. The proportion for repairs would be the same as for rent, subject to any special facts—for example, if the bedrooms were papered and not the surgery, or vice versâ, the result is obvious.

. R. A. M. was in the forces of the Crown during the financial years 1917–18 and 1918–19, and in 1919–20 has been doing work as an assistant, and later was employed on a sessional basis by the Ministry of Pensions on Medical Boards. What is the proper basis of liability for 1919–20 and the future?

*** We have been informed that where a person was in a definite "employment" and after service in the forces has returned to similar work even under a different "employer," he is allowed to average the army or navy emoluments with his civil earnings; if, therefore, E. R. A. M. was acting as an assistant in 1916–17 and had continued to act in that capacity during 1919–20, he could properly have returned his earnings at £516—on the average basis. We agree, however, with him, that his employment is casual and therefore akin to private practice—for example, there is no continuity of engagement even for part time—and on that construction of his agreement with the Ministry of Pensions a different result follows; he is assessable for 1919–20 on the basis of that year's earnings, for 1920–21 on the same amount, for 1921–22 on the basis of the average of 1919–20 and 1920–21, and thereafter on the ordinary three years' average. This assumes, of course, that he does not change the nature of his work—for example, by taking a share in a partnership. E. R. A. M. points out that undue effect may be given under such an arrangement to an unusually high level of earnings in 1919–20, but this is met by a provision in the Income Tax Acts which gives him the right to discard the statutory basis in favour of the earnings of the actual year if they should prove less; that right exists until the year 1919–20—that is, the first year—has disappeared from the basis of the assessment.

LETTERS, NOTES, ETC.

ASPHYXIA FROM INHALATION OF TOBACCO SMOKE.

MR. SOMERTON CLARK, F.R.C.S.E. (formerly C.M.S., Dera Ismail Khan, N.W.F.P., India), writes: During five years' work in Dera Ismail Khan I observed a few cases of a condition which, I believe, has not previously been described. These cases only come for the treatment of burns in the Ramzān (Mohammedan Lent). The patients are men in the prime of life who have ridden long distances across the desert in the later part of the Fast and arrive at their destination exhausted. As they are prohibited from eating or drinking between sunrise and sunset they seek comfort by smoking. They light their hubble-bubbles at a fire and fill their lungs with smoke, till they become asphyxiated and tumble into the fire, burning the left arm and the left side of the face. These cases are not epileptic.

A RECORD TRAMP?

COLONEL FRED. E. BURNHAM, M.D., President of the Canadian War Hospital Fund, writes from Field Head Quarters at Dulcigno, Montenegro, as follows: On April 23rd I had occasion to travel from Dulcigno to Antivari. The usual means of conveyance having for the moment failed, to walk was the only alternative. Accordingly I set out at 4 a.m. and reached Antivari at 8.40 a.m., having traversed twenty-three miles in 4 hr. 40 min. Even among these hardy mountaineers this is looked upon as an achievement. After twenty-six years in the practice of medicine and surgery this may be considered a fairly good demonstration of physical fitness. I am curious to hear of similar efforts by any who have been a quarter of a century in the practice of medicine. In the many journeys which I have made through the Balkans both by day and by night since the beginning of the war, as a rule the mind has not been allowed to rest on time or distance. In the instance above there was no thought of making a record.

READING BY EAR.

DR. FOURNIER D'ALBE published in *Nature* of May 6th a description of the instrument for reading by ear, to which the name optophone has been applied. By means of an ingenious optical system a line of luminous dots is thrown on the print, each dot having a different musical frequency. The light constituting these dots is reflected back on to a tablet of selenium. Those dots of light which fall on white paper produce a note of their own musical frequency in the telephone, while those which fall on black are extinguished. A "white-sounding" optophone is thus obtained, in which the black letters are read by the notes omitted from the scale. With this a blind girl was able to read habitually at a speed of about twenty-five words a minute. By a modification of the instrument it had been found possible to obtain a "black-sounding" optophone, which would probably make it easier to learn the alphabetical sounds.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 37, 38, 39, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 35, 36, and 37.

THE following appointments of certifying factory surgeons are vacant: Blackford (Perth), Campbeltown (Argyll), Gravesend (Kent).

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	7	6
Each additional line...	0	1	3
Whole single column	6	0	0
Whole page	16	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.